



International College of Angiology
53rd Annual World Congress
Grand Hyatt Nusa Dua Bali Resort
Bali ~ The Island of Paradise ~ Indonesia
September 18-20, 2011



Island of the Gods

John B. Chang, MD, FACS, FICA, *Program Chairman*

Local Organizing Committee

Prof. Lilly I. Rilantono, MD, FACC, *Honorary Chairman*

RWM Kaligis, MD, FIHA, FAsCC, FICA, *Chairman*

Scientific Program Abstracts



International College of Angiology Scientific Committee

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David N. Siegel, M.D.
New Hyde Park, New York

We welcome you to the 53rd Annual World Congress of the International College of Angiology at the Grand Hyatt Nusa Dua Bali Resort, Bali, Indonesia.

Evaluation and CME Information

The abstracts have been prepared as an adjunct to the oral presentations. Program evaluation forms are provided with your registration packet. We value your input, which allows us to continually improve the program to meet your educational needs. Additional forms are available at our Registration Desk.

At the conclusion of the program please be prepared to hand in your completed evaluation form when you pick up your CME Certificate.

Those attendees who attend the entire program will be given their CME Certificate on-site at the conclusion of the program. Those who arrive late or depart early will have their certificates mailed to them within 3 weeks of the conclusion of the program. Any questions regarding your CME Certificate should be directed to the Executive Office of the ICA at 802.988.4065.

Accreditation Statement

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Medical Society of the State of New York (MSSNY) through the joint sponsorship of MSSNY and the International College of Angiology, Inc. MSSNY is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education for physicians.

The Medical Society of the State of New York (MSSNY) designates this educational activity for a maximum of 18.5 AMA/PRA (Physician's Recognition Award) Category 1 Credits™. Physicians should claim commensurate with the extent of their participation in the activity.

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53rd Annual World Congress
Bali, Indonesia
September 18-20, 2011

Scientific Program

Sunday, September 18, 2011

13.30 h. – 14.00 h.

Grant Hyatt Nusa Dua Bali Resort

Opening Remarks and Introductions

Introduction By:

President

Takao Ohki, MD, PhD, FICA

Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President-Elect and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology*; Chairman, Department of Surgery and Chief, Department of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Program Chairman

John B. Chang, MD, FACS, FICA

Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Vice Chairman, Board of Directors

John A. Elefteriades, MD, FICA

William W.L. Glenn Professor of Cardiothoracic Surgery; Vice Chairman and Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Chief, Section of Cardiothoracic Surgery, Yale University School of Medicine, New Haven, Connecticut, USA.

Chairman, Scientific Committee

Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FACC, FICA, FIACS

Professor Emeritus of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Local Organizing Committee

Prof. Lily I. Rilantono, MD, FACC, Honorary Chairman

Trustee, Indonesian Society of Vascular Medicine, Jakarta, Indonesia.

RWM Kaligis, MD, FIHA, FAsCC, FICA, Chairman

Head, Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Dahlan Murnizal, MD, Vice Chairman

Head, Department of Vascular Surgery, Faculty of Medicine, University of Indonesia, RSCM Hospital, Jakarta, Indonesia.

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Regional Secretary, Membership Committee, International College of Angiology; Director of General Affairs and Human Capital, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Ismoyo Sunu, MD, FICA, Treasurer

Department of Cardiology and Vascular Medicine, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Prof. Harmani Kalim, MD, MPH, FIHA, FAsCC, Head, Local Scientific Committee

Chair, Indonesian Heart Association Collegium

Welcome Address

(Hon.) Dr. Endang Rahayu Sedyaningsih, MPH, Dr.PH

Minister of Health of the Republic of Indonesia.

RWM Kaligis, MD, FIHA, FAsCC, FICA

Chairman, Local Organizing Committee; Head, Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Sunday, September 18, 2011 (Continued)

13.30 h. – 14.00 h.

Opening Address

John B. Chang, MD, FACS, FICA, Program Chairman

Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Distinguished Service Award

This award is the first to be awarded by the Board of Directors of the International College of Angiology to a member of the College who has made significant contributions in the cardiovascular field, tireless promotion of education and research, and extended valuable services to the International College of Angiology.

Introduction By:

John A. Elefteriades, MD, FICA

William W.L. Glenn Professor of Cardiothoracic Surgery; Vice Chairman and Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Chief, Section of Cardiothoracic Surgery, Yale University School of Medicine, New Haven, Connecticut, USA.

Presentation By:

Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FACC, FICA, FIACS

Professor Emeritus of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Presentation To:

John B. Chang, MD, FACS, FICA

Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Sunday, 18 September 2011 (Continued)

14.00 h. – 14.30 h.

First Scientific Session

Professor Albert Senn Memorial Lecture
Do Statins have a Role in Reduction of Incidence of Post-PCI
Restenosis?

A Special Lecture

This memorial lecture is given in memory of the late Professor Albert Senn, who was internationally renowned in the field of cardiovascular surgery, and a stalwart for the International College of Angiology. This memorial lecture will be given by Professor Kailash Prasad on the topic, "Do Statins have a Role in Reduction of Incidence of Post-PCI Restenosis?"

Introduction By:

John B. Chang, MD, FACS, FICA, Program Chairman

Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Presentation By:

Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FACC, FICA, FIACS

Professor Emeritus of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Background

Dietary reduction of serum cholesterol in hypercholesterolemic rabbits does not regress atherosclerosis. Statins suppress, regress, and slow the progression of atherosclerosis. The effects of statins may be due to their pleiotropic effects. Statins may reduce the incidence of restenosis following percutaneous coronary intervention (PCI).

Objectives

The objectives are to provide evidence in support of the possible role of statins in the reduction of incidence of post-PCI restenosis.

Methods

Literature review and applicant's research.

Results

Post-PCI in-stent restenosis is primarily due to neointima formation which involves three phases: thrombosis (within 24 hours), recruitment (3 to 8 days) and proliferation (starts on day 8). Suggested risk factors involved in post-PCI restenosis include inflammatory mediators (IM), C-reactive protein (CRP), reactive oxygen species (ROS), advanced glycation end products (AGEs) and their receptors (RAGE), and soluble RAGE (sRAGE). All of the above risk factors produce thrombosis, ROS, vascular smooth muscle cell (VSMC) and endothelial cell (EC) proliferation and migration, and extracellular matrix formation. Statins have pleiotropic effects. Besides lowering serum lipids they have anti-inflammatory, antithrombotic, antioxidant and antimutagenic effects, and inhibit VSMC proliferation, but do not inhibit EC proliferation. They inhibit matrix metalloproteinase and cyclooxygenase-2, lower AGEs, decrease expression of RAGE and increase serum levels of sRAGE. They also increase the synthesis of nitric oxide through an increase in the expression and activity of endothelial nitric oxide synthase. Pre-procedural statin therapy has been shown to reduce peri- and post-PCI myonecrosis, and reduce the need for repeat revascularization. There is evidence that statin-eluting stents inhibit in-stent restenosis in animal models.

Conclusion

In conclusion, because of the pleiotropic effects of statins, they may play a role in the reduction of incidence of post-PCI restenosis.

Sunday, September 18, 2011 (Continued)

14.30 h. – 15.00 h.

Second Scientific Session

Professor Hans J. Hachen Memorial Lecture
What can be Found in a Cardiovascular Risk Population?
A Special Lecture

This memorial lecture is given in the memory of the late Professor Hans J. Hachen, who enriched the International College of Angiology with his wisdom and support. He was internationally renowned for his expertise in cardiovascular disease, and was a stalwart for the International College of Angiology. The memorial lecture will be given by Professor Pertti Aarnio on the topic, "What can be Found in a Cardiovascular Risk Population?"

Introduction By:

John B. Chang, MD, FACS, FICA, Program Chairman

Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Presentation By:

Pertti Aarnio, MD, PhD, FICA

Professor of Surgery; Member, Board of Directors and Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Chief, Department of Surgery, Satakunta Central Hospital and University of Turku, Pori, Finland.

Cardiovascular diseases are the leading cause of death in the world, and still increasing due to changing life habits and ageing population.

The Harmonica Project was created to identify 45 to 70-year-old persons at risk for cardiovascular disease in the general population. Using a two-stage screening method, we could target the nurse-given lifestyle counselling to persons at risk, and limit the number of physician's appointments for those who might benefit from preventive medication. Finnish Diabetes Risk Score and nurse-measured blood pressure were practical primary screening methods in the general population.

The expertise of nurses could be utilized more in primary care to identify the high risk subjects in communities.

Among the 4,450 participants of the Harmonica project in Harjavalta and Kokemäki, Finland, a total of 1,106 subjects with hypertension were identified, when patients with known cardiovascular disease and previously diagnosed diabetes were excluded. In this way, the impact of hypertension *per se* on glucose homeostasis and target organ damage could be estimated.

Glucose disorders are more common in hypertensive subjects than in the general population. Using the criteria of the metabolic syndrome as the criteria for performing an oral glucose tolerance test, the number of tests can be reduced by one third and still find almost all the cases of type 2 diabetes and pre-diabetes.

Moderately decreased renal function is as common as newly detected diabetes in hypertensive subjects. Hypertensive women with the metabolic syndrome are especially at risk for renal insufficiency. If renal function of the hypertensive subjects is estimated by plasma creatinine alone, three-fourth of the patients with renal insufficiency would be overlooked compared to using estimated glomerular filtration rate as the screening method. Peripheral arterial disease or borderline peripheral arterial disease can be detected in every third of the hypertensive subjects, more often in those with widened pulse pressure over 65 mmHg. Hypertension is an independent risk factor associated with peripheral arterial disease. Measuring ankle-brachial index using the lower of either one of the ankle pressures might be practical in primary care practice to identify the persons at high cardiovascular risk.

Sunday, September 18, 2011 (Continued)

15.00 h. – 15.30 h.

Third Scientific Session

Young Investigator Award Presentations

The aim of this forum is to encourage young basic scientists, physicians, and surgeons to engage in high quality research that forms the basis of future advances in pathophysiology, diagnosis, and treatment aspects of disease. This session provides selected presentations of high quality research in the field of angiology by young investigators, the future partners of the healthcare delivery system.

15.00 Endovascular Treatment as a Reasonable Alternative Option for Extensive Chronic Total Occlusion of the Iliac Artery: Jung Bum Hong, MD¹, Jang Yong Kim, MD, PhD, FICA¹, Yong Sun Jeon, MD², Soon Gu Cho, MD², Ho Kil Lee, MD³, Kee Chun Hong, MD¹; ¹Division of Vascular Surgery, Department of Surgery and ²Radiology, Inha University College of Medicine, Incheon, South Korea; ³Department of Surgery, Incheon Medical Center, Incheon, South Korea.

Background

Routine endovascular aneurysm repair (EVAR) is not optimal for abdominal aortic aneurysms (AAAs) with challenging aortic neck. Challenging aortic neck usually means conical, short, or severely angulated aortic neck. The solutions can be open repair, hybrid surgery, fenestrated endograft, branched endograft, or chimney technique. Fenestrated or branched endograft have been shown to have optimal results but are not yet available in Korea. Recent reports showed the same mortality with less morbidity of EVAR with the chimney technique as compared to open repair.

Case

An 81-year old man presented with AAA, which was 7.5cm in diameter and severe angulation in the aortic neck, found during evaluation of gastric ulcer bleeding. EVAR was performed after general anesthesia. Sheaths for stenting both renal arteries were inserted through the brachial artery, and then, a Zenith endograft was deployed with coverage of both renal arteries to control aortic neck. Balloon expandable covered stents were deployed and the kissing ballooning technique was performed. Completion angiography showed no endoleak. Patient recovered after transient hematuria.

Conclusion

We experienced and report the successful treatment of EVAR with the chimney technique.

Sunday, September 18, 2011 (Continued)

15.00 h. – 15.30 h.

Third Scientific Session

Young Investigator Award Presentations (Continued)

15.10 A Single Surgeon's 35-Year Experience with Carotid Endarterectomy: Robert Hacker, MD, Chief Surgical Resident, North Shore-LIJ Healthcare System, New Hyde Park, New York, USA; John B. Chang, MD, FACS, FICA, Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Background

Carotid endarterectomy (CEA) has been the gold standard surgical therapy for the prevention of stroke since the mid 1950's. Since the original published reports, a plethora of trials have attempted to describe the optimal technical and management details of the procedure; including non-surgical management, optimal drug regimens, best shunting methods and intraoperative monitoring techniques just to name a few. Many of the studies published have large numbers of patients, mostly pooled from multiple centers and surgeons. To date, few papers report long term follow-up greater than 25-years, fewer report a single surgeon's outcomes.

Objective

To report a single practitioner's, single institutional 35-year experience with CEA.

Methods

Retrospective analysis of prospectively collected data was evaluated. Inclusion criteria were any patients who underwent a CEA and were closed either primarily or with a greater saphenous vein patch. Results pertaining to side, surgical approach, reoperation rate and reason, 60-day morbidity and mortality as well as long-term results were analyzed. Data was compared to multiple published reports of CEA both with and without the use of a vein patch.

Results

After 35-years of operating a total of 1029 patients underwent 1173 CEAs, right-593 (50.55%), left-580 (49.44%); 144 (13.9%) patients' underwent bilateral CEA. A total of 953 (81.24%) greater saphenous vein patches were performed with 212 (18.01%) closed primarily, data was unavailable for 8(.68%) repairs. Restenosis occurred in 16 (1.36%) patients (left-10 right-6, vein patch-12, primary closure-4) with an average stenosis of 99% before reoperation. The 60-day post-operative results for primary closure versus vein patch respectively were: ipsilateral stroke 1.7 % / 0.5 %; mortality 2.2 % / 0.3 % and any stroke related death 3.4% / 0.76%. Over the 35-year analysis a total of 283 patients died of both post-operative and natural causes. Overall morbidity of CEA with greater saphenous vein patch closure compared to primary closure was statistically significant, $P < 0.01$.

Conclusion

Greater saphenous vein patch CEA is time tested, and a robust method for the treatment of symptomatic and non-symptomatic carotid lesions. A single practitioner's long-term results are consistent with previously published randomized multicenter reports. Both this and previously published data suggest that the currently employed method of CEA closed with a greater saphenous vein patch represent the gold standard of treatment.

Sunday, September 18, 2011 (Continued)

15.30 h. – 17.00 h.

Fourth Scientific Session

Atherosclerosis

This session deals with the effect of extract of pericarp of mangosteen on serum lipids, inflammatory mediators, and atherosclerosis. It also describes the inability of cyclosporine to prevent hypercholesterolemic atherosclerosis.

15.30 Effect of Extract from Pericarp of Mangosteen (*Garcinia mangostana* Linn) as an Anti-Inflammatory Agent in Rat Models with Atherosclerosis: Salva Reverentia, MD, Fathiyah Safithri, MD, Ade Seniorita, MD, Djanggan Sargowo, MD, Professor, Department of Cardiology; Division of Pharmacology, Faculty of Medicine, University of Muhammadiyah Malang, East Java, Indonesia; Department of Internal Medicine, Faculty of Medicine, Brawijaya University, Saiful Anwar Hospital, Malang, East Java, Indonesia.

Background

Atherosclerosis is an inflammatory disease characterized by intense immunological activity, in which immune responses participate in every phase of atherosclerosis. Of fundamental importance in atherogenesis is *nuclear factor- κ B* (NF- κ B) which regulates activation and secretion of pro-inflammatory cytokines such as *tumor necrosis factor* (TNF- α) *interleukin-1* (IL-1), and *interleukin-6* (IL-6).

Objectives

The extract from pericarp of mangosteen (*Garcinia Mangostana* Linn) were carried out to investigate the anti-inflammatory activity in rat models with atherosclerosis.

Methods

The subjects of the study were 30 albino rats (*Rattus Novergicus Strain Wistar*), divided into 5 groups with six rats in each group. Group I comprised of normal healthy rats and remained untreated for 12 weeks; Group II comprised of high cholesterol diet induced atherosclerotic rats for 12 weeks; Group III, IV, and V comprised of high cholesterol diet induced atherosclerosis, and were administered extract from pericarp of mangosteen orally (200mg/kg; 400 mg/kg, 800 mg/kg) daily for 12 weeks. After 12 weeks of treatment, rats were decapitated and blood was sample collected from the aorta for determination level of TNF- α , IL-1, and IL-6 by ELISA.

Results

Oral administration (800 mg/kg) of the extract from pericarp of mangosteen significantly decreased the level of TNF- α , IL-1, and IL-6.

Conclusion

These results suggest that the extract from pericarp of mangosteen (*Garcinia Mangostana* Linn) possess anti-inflammatory actions by reducing level of TNF- α , IL-1, and IL-6, which prevent the development of atherosclerosis.

Sunday, September 18, 2011 (Continued)

15.30 h. – 17.00 h.

Fourth Scientific Session

Atherosclerosis

15.40 Effect of Mangosteen Pericarp as a Lipid Lowering Agent in Atherosclerotic

Rat Models: Elok Erlita Nur Farradina, MD, Isbandiya, Djanggan Sargowo, MD, Professor, Department of Cardiology; Faculty of Medicine, University of Muhammadiyah, Malang, East Java, Indonesia; Faculty of Medicine, Brawijaya University, Saiful Anwar General Hospital, Malang, East Java, Indonesia.

Background

Dyslipidemia is a risk factor of atherosclerosis, characterized by the decrease of HDL and increase of LDL, triglyceride, and total cholesterol. Previous studies showed a positive correlation between dyslipidemia and severity of atherosclerosis. The effect of pericarp mangosteen contains *Xanthone*, and is presumed to decrease the total cholesterol, triglycerides, and LDL levels, and increase HDL levels from the blood of white rats by activating the path of reverse cholesterol transport.

Objectives

To prove extract from pericarp mangosteen repairs the lipid profile by increasing the levels of HDL and decreasing the levels of LDL, triglyceride, and total cholesterol.

Methods

This experiment included post-testing only the control group. Wistar white rats were divided into 5 groups. The sample-Group I; negative control-Group II; positive control and the three other groups were treated with extract from pericarp mangosteen in various doses (200mg/day, 400mg/day, 800 mg/day). The data was analyzed by One Way Anova, Tuckey test, correlation test, and linear regression test.

Results

The results of this observation showed that extract of pericarp mangosteen suspension given in doses of 200, 400, and 800 mg/day could decrease the total cholesterol, triglyceride, and LDL levels, and increase the HDL level from the blood of white rats, significantly for each dose.

Conclusion

Oral administration (400 mg/day), of extract from pericarp of mangosteen increases HDL and decreases LDL, triglyceride, and total cholesterol of atherosclerotic male white rats.

Sunday, September 18, 2011 (Continued)

15.30 h. – 17.00 h.

Fourth Scientific Session

Atherosclerosis

15.50 Correlation Between the Level of LP-PLA₂, MDA, F₂-ISP Serum, Aorta, and the Number of Foam Cells in Atherogenesis Process of Wistar Rats:

Professor Djanggan Sargowo, MD, Professor, Department of Cardiology; Retno Susilowati, MD, Rasajad Indra, MD, Askandar Tjokroprawiro, MD, Sri Widyanti, MD; Faculty of Medicine, Brawijaya University, Saiful Anwar General Hospital, Malang, East Java, Indonesia.

Background

Atherogenesis is the process of lipid accumulation of cholesterol in macrophage foam cells in the sub-intima of blood vessel walls of LDL-C plasma oxidative stress conditions. Oxidative stress levels can be indicated by a high level of MDA and F₂-Isp. Atherogenesis non-hypercholesterolemia in individuals usually has elevated levels of Lp-PLA₂, and the correlation between the levels of Lp-PLA₂, and number of foam cells should be studied.

Purpose

The objective of this study was to determine the levels of Lp-PLA₂, MDA, F₂-Isp in the aorta, and the number of foam cells. We tried to determine the correlation among levels of Lp-PLA₂, MDA, and F₂-Isp in serum levels in the aorta, and its correlation with the number of foam cells.

Methodology

Rats were divided into 2 groups; the control group fed with a normal diet; and the treated group fed a high cholesterol diet for 2, 8, and 12 weeks respectively. LDL-C levels were measured with the formula Fiedwall, MDA with TBA method test, the F₂-isoprostane and Lp-PLA₂ with Elisa method, the number of foam cells with Oil Red O staining data were analyzed by t test, path analysis and correlation.

Result

Lp-PLA₂ levels in the aorta and serum increased significantly between the 2nd to 8th week ($p < 0.01$). There was no significant difference between Lp-PLA₂ levels in weeks 8-12 ($p > 0.05$). Lp-PLA₂ levels were highly significant with MDA levels both in the aorta and serum ($p < 0.01$). Path analysis showed levels of MDA and F₂-Isp aorta were highly significant with the levels of LDL-C serum ($p < 0.01$), and aortic MDA levels highly significant in relationship to the number of foam cells ($p > 0.01$). LDL, F₂-Isp, and Lp-PLA₂ in the aorta were not statistically significant with the number of foam cells ($p > 0.05$). Serum MDA level was not statistically significant in either the levels in the aorta or with the number of foam cells ($p > 0.05$). F₂-Isp serum levels were not correlate significantly ($p > 0.05$) with levels of in the aorta but significantly correlated ($p > 0.05$) with the number of foam cells. Lp-PLA₂ levels correlated significantly ($p < 0.01$) both levels in the aorta and with the number of foam cells.

Conclusion

There is a significant correlation between the levels of Lp-PLA₂ and MDA, both in serum and the aorta; Lp-PLA₂ levels correlate with serum levels in the aorta and the number of foam cells. However, the aorta levels do not directly correlate with the number of foam cells, because the correlation occurs through increased levels oxidative stress in the aorta tissue.

Sunday, September 18, 2011 (Continued)

15.30 h. – 17.00 h.

Fourth Scientific Session

Atherosclerosis

16.00 **The Influence of Extract from Pericarp of Mangosteen (*Garcinia Mangostana Linn*) as an Antioxidant in Atherosclerotic Rat Models:** Dicky H. Muhammad, MD, Meddy Setiawan, MD, Djanggan Sargowo, MD, Professor, Department of Cardiology; Faculty of Medicine, University of Muhammadiyah, Melang, East Java, Indonesia; Department of Cardiology, Faculty of Medicine, Brawijaya University, Saiful Anwar Hospital, Melang, East Java, Indonesia.

Background

Atherosclerosis is defined as the accumulation of *dari Low Density Lipoprotein (LDL)*, and inflammatory cells in tunica intima, triggered by oxidative stress. Oxidative stress increases the level of *Malondialdehyd (MDA)*, which its activity inhibited by *superoksida dismutase (SOD)* as endogenous antioxidant.

Objectives

The aim of this research is to evaluate the antioxidative activity of extract from pericarp of mangosteen (*Garciniana Mangostana Linn*) in atherosclerotic rat models by increasing levels of SOD and reducing levels of MDA.

Methods

The subjects of this research were 25 white rats (*Rattus Novergicus Strain Wistar*), divided into 5 groups (negative control, positive control, administration of extract from pericarp of mangosteen 200, 400, and 800 mg/kg, p.o for 90 days) employing true experimental with *the post-test only, Control Group Design*. The parameters used in this study, SOD and MDA, were read using spectrophotometry, and analyzed by test of normality, homogeneity test, ANOVA, and BNT1% test, using correlation and regression tests.

Results

Oral administration (800mg/kg) of extract from pericarp of mangosteen displays antioxidative activity by increasing levels of SOD and decreasing levels of MDA.

Conclusion

This research suggests that the extract from pericarp of mangosteen may be a potent antioxidant.

Sunday, September 18, 2011 (Continued)

15.30 h. – 17.00 h.

Fourth Scientific Session

Atherosclerosis

16.10 Effect of Mangosteen Extract as an Anti-Inflammatory Agent (Inhibiting NF- κ B Activation, Decreasing the Level of TNF- α and IL-1) in Rat Models Fed a High Cholesterol Diet: Ade Senorita, MD, Resident, Internal Medicine; Djanggan Sargowo, MD, Professor, Department of Cardiology; Department of Internal Medicine, Brawijaya University, Malang, East Java, Indonesia.

Background

The fruit hull of *Garcinia Mangostana* was used as an anti-inflammatory drug, and anti-lipidemic activity in animal models in Southeast Asia. Two Xanthone, α and γ Mangostins have both anti-inflammatory and anti-oxidant effects. However, the actual mechanism of the anti-inflammatory action of xanthones remains unclear. In inflammation, tumor necrosis factor- α (TNF- α), IL-1 plays a pivotal role. NF- κ B, an oxidant stress sensitive nuclear transcription factor, controls the expression in many genes including the TNF- α gene. We suggest that xanthone decreased plasma lipid, directly inhibits IKK activity, and thereby prevents TNF- α , IL-1 gene transcription, and NF- κ B target gene.

Objectives

The purpose of this study was to evaluate the possible effect of mangosteen to reduce inflammation in Wistar rats fed a cholesterol-containing diet in-vivo. Cells induced NF- κ B activation and TNF- α , IL-1 concentration in circulation.

Methods

This experimental study was conducted on 30 Wistar rats. The rats were randomized into 5 groups (n+6 for each), fed a normal diet, high cholesterol diet, and a high cholesterol diet with Mangosteen extracts of 200mg, 400mg, and 800mg respectively. NF- κ B expression was examined semi-quantitatively by immunohistochemistry. IL-1 and TNF- α in the blood was calculated by Elisa methods. The statistical differences were assessed by one-way ANOVA followed by Tuckey post-hoc test.

Results

NF- κ B expression significantly decreased in Wistar rats fed a high cholesterol diet with mangosteen extract of 200mg, 400mg, and 800mg (mean: 29.67 ± 6.12 ; 71.83 ± 4.7 ; 71.0 ± 2.5 ; 56.7 ± 0.08 ; and 39.0 ± 6.16) $p=0.000$. IL-1 (mean: 0.310 ± 0.08 ; 5.66 ± 0.10 ; 0.411 ± 0.03 ; 0.34 ± 0.039 ; and 0.31 ± 0.062) $p=0.000$. TNF- α (mean: 0.122 ± 0.08 ; 0.378 ± 0.108 ; 0.206 ± 0.30 ; 0.145 ± 0.029 ; and 0.130 ± 0.02) $p=0.00$, (significant $p < 0.01$) was calculated by Elisa methods also decreased significantly with $p=0.000$.

Conclusion

NF- κ B expression activation, IL-1 and TNF- α decreased significantly in Wistar rats fed a high cholesterol diet with mangosteen extract of 200mg, 400 mg, and 800 mg, $p= 0.000$; ($p < 0.01$). Further investigation is needed to examine whether xanthone in mangosteen extract directly inhibits IKK activity and thereby preventing NF- κ B activation, decreased IL-1, and TNF- α .

Sunday, September 18, 2011 (Continued)

15.30 h. – 17.00 h.

Fourth Scientific Session

Atherosclerosis

16.20 **Cyclosporine-A (CsA) does not Attenuate High Cholesterol-Induced Atherosclerosis in Rabbits:** Ahmed Shoker, MD, FRCPC, FICA¹, Rajni Chibbar, MD², Siew Hon Ng, MD¹, Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FACC, FICA, FIACS³; Professor Emeritus of Physiology; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Divisions of ¹Nephrology and ²Pathology, Royal University Hospital, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada; ³Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Background and Objectives

Atherosclerosis is aggravated by immune activation. We, therefore, tested the hypothesis that CsA may limit the extent of atherosclerosis and macrophage tissue infiltrate of atherosclerotic plaques induced by a high-cholesterol diet in New Zealand white rats.

Methods

Aortic atherosclerosis was induced by 1% cholesterol diet for eight weeks. Four groups of six animals each were divided into Group 1 (Control), Group 2 (CsA 15 mg/day for eight weeks), Group 3 (High-cholesterol diet), and Group 4 (High-cholesterol/CsA). Blood and tissue samples were taken at the end of the study and were examined for malondialdehyde (MDA) and protein carbonyl. The extent of aortic atherosclerosis and tissue macrophages were compared. Anti-macrophage (clone: RAM 11, DAKO, USA) monoclonal antibody was used to stain cell infiltrates.

Results

Mean serum MDA of 2.5 ± 0.6 mmol/L and protein carbonyl of 7.3 ± 1.9 nmol/mL in group 2 were significantly higher compared to control of 0.58 ± 0.05 mmol/L and 1.37 ± 0.2 nmol/L. Both measurements were similar in aortic tissues. Percent atherosclerosis of intimal surface was 0.0, 0.0, 45 ± 12 , and 38 ± 8 % in groups 1-4 respectively. Macrophage contents of the intima were 3.2 ± 1.6 , 4.9 ± 2 , 69.8 ± 5 , and 71.7 ± 5.4 cells/ μm^2 in groups 1 to 4 respectively.

Conclusion

Oral CsA did not attenuate the extent of aortic atherosclerosis. Resistance of macrophages to the inhibitory effect of CsA may explain its inability to reduce hyperlipidemia induced atherosclerosis.

Sunday, September 18, 2011 (Continued)

15.30 h. – 17.00 h.

Fourth Scientific Session

Atherosclerosis

16.30 Pericarp of Mangosteen Inhibits Nuclear Factors κ B's (NF- κ B) Activation and Reduces ICAM-1's and IL-6's Expression in High Cholesterol Diet Mice: M. Hendarto, MD¹, Mohammad Saifur Rohman, MD, PhD², Djanggan Sargowo, MD, PhD²; Departments of ¹Internal Medicine and ²Cardiology and Vascular Medicine, Medical Faculty of Brawijaya, University, Saiful Anwar General Hospital, Malang, East Java, Indonesia.

Background

Atherosclerosis is the cause of more than 50% of all deaths in developed countries, and major morbidity in worldwide. Atherosclerosis is widely viewed as an inflammatory disease with hypercholesterolemia being a dominant underlying risk factor.

Objective

To examine whether pericarp mangosteenp inhibits NF- κ B, IL-6, and ICAM-1 expression in high-cholesterol diet mice.

Methods

Rattus novergicus strain Wistar were divided into 5 treatment groups; 4 groups with a high fat diet, and 1 group of a non-high-cholesterol diet. Three of the groups were of mice treated with 200mg, 400mg, and 800mg of pericarp mangosteen crude extract, and one group was fed a high fat diet without treatment, and used as the control positive. NF- κ B's activation and ICAM-1 expression were checked by immunohistochemistry. IL-6 protein was measured by ELISA method.

Results

There were significant differences between NF- κ B, ICAM-1, and IL-6 expression in dyslipidemia and non-dyslipidemia mice ($p < 0.05$). The 800mg pericarp extract-dose group had the highest inhibition effect on NF- κ B's and IL-6's expression. The 400mg pericarp mangosteen and 800mg doses had significantly inhibited ICAM-1 protein expression.

Conclusion

The extract of pericarp mangosteen significantly inhibits NF- κ B activation and reduces ICAM-1's and IL-6's expression in high-cholesterol mice.

Sunday, September 18, 2011 (Continued)

15.30 h. – 17.00 h.

Fourth Scientific Session

Atherosclerosis

16.40 **Single Center Experience of Rotational Atherectomy:** Jiang'an Wang, MD, PhD, FACC, Professor of Cardiology, No. 2 Hospital Affiliated to Zhejiang University, Hongzhou, Zhejiang, Republic of China.

Background

Rotational atherectomy (RA) uses a tiny rotating cutting blade to open a narrowed artery and improve blood flow to or from the heart. Pre-treating calcified lesions with rotational atherectomy can be one of the best ways to enhance proper stent placement.

Objectives

In the past 3 years, 143 patients received RA in our heart center.

Methods

Ninety-three percent of the patients had heavy calcification lesions, and 7% had "hard" lesions which cannot be dilated with balloon, nor could the balloon pass the lesions. The procedural success rate is 96.5%, with 6 patients demonstrating "slow-flow" after RA, 5 patients had "no-flow," 1 patient had a dissection, 1 patient had coronary perforation, and 1 patient died.

Results

In our center, RA was used in most lesions (>90%) of which were classified as heavily calcified lesions. Over 60% of the patients received IVUS before RA, with calcification over 180°. If the IVUS catheter cannot pass the lesion, or the lesions cannot be dilated by a balloon at low pressure (6~8 atm), we selected RA without an IVUS test. In some cases with ostial lesions, "hard" but no calcified lesions, we also selected RA. We often select "small" burrs, such as 1.25mm and 1.5mm, to do RA. The purpose of RA in our center is to achieve smooth stent delivery, and debulk atherosclerotic plaque at the same time. After RA, we dilate the lesion with low pressure about 6~8 atm, and insert stents. We use post-dilation whenever possible.

Monday, September 19, 2011

08.00 h. – 09.00 h.

Fifth Scientific Session

**Professor Kailash Prasad Oration Lecture
Surgical Treatment of Aortic Aneurysms
A Special Lecture**

This special oration lecture provides a long-term personal experience on the open repair of abdominal aortic aneurysms. The criteria of non-resective repair of AAA's and endovascular repair of aneurysms, and the advantages of open repair of AAA's will be discussed.

Introduction By:

John A. Elefteriades, MD, FICA

William W.L. Glenn Professor of Cardiothoracic Surgery; Vice Chairman and Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Chief, Section of Cardiothoracic Surgery, Yale University School of Medicine, New Haven, Connecticut, USA.

Presentation By:

John B. Chang, MD, FACS, FICA, Program Chairman

Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

General Introduction

Professor Kailash Prasad is a most significant contributor to the International College of Angiology, as well as a loyal leader of the ICA. In addition, Professor Prasad is a scholar in cardiology, and a most prominent researcher in cardiac physiology and medical science. He is my wonderful friend and confidant, and a dedicated father and family man.

Introduction

The extent of an aortic aneurysm begins at the root of the aorta, and ascends down to the iliac bifurcation.

Methods and Results

Long-term outcome of open repair of abdominal aortic aneurysms (AAA's) is reviewed on the basis of personal experiences. The non-ruptured surgical mortality rates range from 1.5% to 6.5%, with a mean of 4.5%. The long-term outcome of aneurysm repair is reviewed retrospectively up to 25 years post-operatively. In addition to long-term outcome of elective open repair of aortic aneurysms, the mortality rate of ruptured aortic aneurysms was reviewed in the literature as compared with personal results, with a range from 23% to 69%, mean to 49% in the literature. The etiology of the aneurysm was discussed including generic effect. Other issues will be discussed, including the criteria for non-resective repair of AAA, and endovascular repair of the aneurysm as well as complex repair techniques.

Conclusions

1. Open repair of AAA's can be done with a low mortality rate and is durable.
2. Open repair procedures remain the gold standard.
3. Since EVAR is associated with decreased blood loss, less intensive care treatment, and lower in-hospital mortality, we believe that current generation devices should be used on suitable patients.
4. The effect of the aortic growth and the long-term efficacy of endografts, however, must be considered when determining who should undergo EVAR, a conventional open repair, or non-resective therapy.

Monday, September 19, 2011 (Continued)

09.00 h. – 10.15 h.

Sixth Scientific Session

Endovascular Repair of Arterial Aneurysms

This sessions features endovascular repair of aortic aneurysms and acute type B aortic dissection.

09.00 Treating Mycotic Aortic Aneurysms with Endovascular Stent Graft Repair:

Wai-Ki Yiu, MBBS, PhD, FRCS(Ed), Stephen WK Cheng, MS, FRCS, FACS; Department of Surgery, The University of Hong Kong Medical Centre, Queen Mary Hospital, Hong Kong.

Background

Mycotic aortic aneurysm is a life-threatening condition. The traditional standard open debridement with in-situ or extra-anatomical revascularization carries a high operative morbidity and mortality. In the era of endovascular surgery, endovascular repair may be a treatment option despite the inherent risk of stent graft infection and technique limitation.

Objective

This study is to investigate the treatment outcome of patients with mycotic aortic aneurysms after endovascular repair.

Methods

From January 2002 to December 2010, a total of 17 patients with mycotic aortic aneurysms involving thoracic, abdominal aorta, and iliac arteries were treated with endovascular repair, and reviewed.

Results

The aneurysm sites included the aortic arch (n=2), descending thoracic aorta (n=5), paravisceral aorta (n=3), infrarenal aorta (n=6) and iliac artery (n=1). Two patients received aortic surgery and two patients underwent GI surgery before presentation. Fever was detected in 23.1% of patients; Pain (47.7%) and GI bleeding (35.3%) were the predominant presenting symptoms. Pre-operative signs of infection including leukocytosis, raised ESR and CRP were observed in 41.2%, 47.1%, and 64.7% of patients respectively. Salmonella was the predominant organism cultured. There were three hospital deaths (17.6%) due to haemopericardium secondary to mycotic atrial rupture, massive GI bleeding and multi-organ failure. Four late deaths (23.5%) from terminal malignancy and stroke were noted after a mean follow up of 27 ± 8.3 months. Mycotic thoracic aortic aneurysm was related to higher mortality (62.5%). All patients except two received life-long antibiotics where quinolone (41.2%) and cephalosporin (11.8%) were the most commonly used. None of them died from sepsis and no stent graft infection was detected.

Conclusion

Mycotic aneurysm is still a life-threatening condition. Despite the septic nature of mycotic aneurysm, endovascular repair is still feasible and not related to higher graft-related complications or mortality in our series.

Monday, September 19, 2011 (Continued)

09.00 h. – 10.15 h.

Sixth Scientific Session

Endovascular Repair of Arterial Aneurysms

09.10 Endovascular Aneurysm Repair is Safe and Effective for Advanced Age Patients: Kota Shukuzawa, MD, Koji Maeda, MD, Kenjiro Kaneko, MD, Hiroki Ohta, MD, FICA, Makoto Sumi, MD, FICA, Katsunori Tanaka, MD, Koji Kurosawa, MD, Hiromasa Tachihara, MD, Naoki Toya, MD, FICA, Yuji Kanaoka, MD, FICA, Hitoshi Sakuda, MD, Atsushi Ishida, MD, FICA, Takao Ohki, MD, PhD, FICA, Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology*; Chairman, Department of Surgery and Chief, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background and Objectives

Many elderly patients with abdominal aortic aneurysms (AAAs) are rejected to undergo conventional open repair because of their advanced age and co-morbidity, and often live in fear of AAA rupture. Endovascular aortic aneurysm repair (EVAR) which does not require laparotomy, appears to be best suited for patients with advanced age that were traditionally left untreated. The aim of this study was to clarify the safety of EVAR for advanced age patients.

Methods

During the last 4 years, 933 patients with AAA were treated with EVAR with either the Cook Zenith or the Gore Excluder device at our institution. The patients were divided into two groups according to their ages. Group O included 323 patients who were 80 years old or over (80-96 years), while group Y included 610 patients under 80 years old. We compared peri-operative factors including, LOS, operation time, blood loss, fluoroscope time, contrast volume, and post-operative status between the 2 groups.

Results

The pre-operative maximum AAA diameter was 60.9mm in group O, and 57.4mm in group Y ($p < 0.05$). There were no significant differences between the groups for operative time (174.8 mins in group O vs 169.1 mins in group Y), blood loss (432 ml vs 299 ml), fluoro time (38 mins vs 36.5 mins), and contrast volume (132.5 ml vs 140.5 ml). The hospital mortality rate was 0.3% in group O, and 0% in group Y. The rate of post-operative complications did not significantly differ between the groups. The length of post-operative hospitalization was significantly longer in group O (6.6days) compared to group Y (5.3days) ($p < 0.05$). All patients in group O were able to go home and none required transfer to a nursing home.

Conclusion

EVAR can be performed safely in patients with advanced age. Patients' satisfaction is high since EVAR can relieve the patient from fear of rupture and sudden death while maintaining their QOL owing to its' minimally invasiveness. We believe that advanced age should not be a reason to reject EVAR in those patients with a large AAA.

Monday, September 19, 2011 (Continued)

09.00 h. – 10.15 h.

Sixth Scientific Session

Endovascular Repair of Arterial Aneurysms

09.20 **Embolic Complications after Endovascular Treatment of Abdominal Aortic Aneurysms:** Reo Takizawa, MD, Kota Shukuzawa, MD, Koji Maeda, MD, Kenjiro Kaneko, MD, Hiroki Ohta, MD, FICA, Makoto Sumi, MD, FICA, Katsunori Tanaka, MD, Koji Kurosawa, MD, Shigeki Hirayama, MD, Hiromasa Tachihara, MD, Naoki Toya, MD, Yuji Kanaoka, MD, FICA, Hitoshi Sakuda, MD, Atsushi Ishida, MD, FICA, Takao Ohki, MD, PhD, FICA, Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology*; Chairman, Department of Surgery and Chief, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background and Objectives

The purpose of this study is to present our experience with the incidence, risk factors, and prognosis of embolic events after endovascular aneurysm repair (EVAR) of abdominal aortic aneurysms (AAAs).

Methods

We performed a retrospective review of patients who underwent EVAR with the Zenith and the Excluder stent graft at Jikei University during the last 3 years. A total of 539 patients underwent elective EVAR. We reviewed 438 patients (205 patients with Zenith, 233 patients with Excluder), excluding fenestrated and branched EVAR. When coil embolization of the hypogastric artery was needed, it was performed at the time of EVAR concomitantly.

Results

Technical success rate was 91.1% (399/438) with no surgical mortality. The operation time, volume of blood loss, and amount of contrast used were 185 minutes, 380 ml, and 148 ml. Embolic complications occurred in 9 patients (2%). Among 9 patients with embolic complications, bowel ischemia occurred in 4 cases, all of which were successfully treated with bowel rest and hydration, lower extremity atheroembolization occurred in 3 cases, and stroke in one. Two patients (one patient in each group) died of cholesterol crystal embolization. Seven of 9 embolic complications (77.8%) occurred in the Zenith patients. In our study, adjusted risk factor of Cox analysis showed smoking (HR,6.05; 95% CI 1.41-25.99; p=0.016) and shaggy aorta (HR,29.86; 95% CI 7.02-127.04; p=0.000) as independent predictors of embolic complications.

Conclusion

The presence of shaggy aorta and smoking habit are independent predictors of ischemic complications following EVAR.

Monday, September 19, 2011 (Continued)

09.00 h. – 10.15 h.

Sixth Scientific Session

Endovascular Repair of Arterial Aneurysms

09.30 Short- and Mid-Term Results of Endovascular Aortic Repair (EVAR) with a Separated Stent Graft to Treat Abdominal Aortic Aneurysms (AAAs): Iwan Dakota, MD, FICA, Regional Secretary, Membership Committee, International College of Angiology; Director of General Affairs and Human Capital, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia; Taofan, MD, S. Adiarto, MD, H. Andriantoro, MD, FICA, Ismoyo Sunu, MD, FICA, RWM Kaligis, MD, FICA, G.M. Harimurti, MD; Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Background

Abdominal aortic aneurysm (AAA) is a catastrophic situation which could lead to a high mortality rate without proper management. Endovascular aortic repair (EVAR) has been widely accepted. Data from the the last two decades showed the treatment of AAA with EVAR is promising, particularly in those patients with a high risk for an open surgical procedure. The current commercially available stent grafts come with a relatively bigger delivery system. Some problems were been reported with the delivery or deployment of those stent grafts, due to the relatively smaller caliber of femoral arteries, particularly in the Asian population. Thus, the smaller profile delivery system is one of the preferred options in view of reducing the risk of failure during delivery and deployment of these stent grafts.

Aim

To determine the short- and mid-term outcome and safety of abdominal aortic aneurysms (AAAs) treated with a separated aortic stent graft system.

Method

Between August 2004 and December 2010, 27 patients with infrarenal AAA underwent treatment with a separated stent-graft (*Seal®*, *S&G Co, Korea*). There were 23 men and 4 women with a median age of 63.2 years. Anatomy of the abdominal aorta and the iliac arteries were investigated with high resolution contrast CT together with the results of the digital subtraction angiography (DSA). The majority of patients had comorbid illnesses such hypertension (96.3%), coronary artery disease (CAD) (37.0%), and diabetes mellitus (DM) (14.8%). Duration of follow-up period ranged from 6 to 60 months (median 34 months).

Results

Endovascular aortic repair (EVAR) for AAA was performed using the transfemoral approach with 12-14 Fr sheath. Local anesthesia to the bilateral groin was applied in all cases. Proximal landing zone varied from 1.5 to 3.2 cm. Technical success rate was 92.6% (25 pts). There was no immediate conversion to open surgical repair. There was no aneurysm related mortality during the post-operative period. Endoleak rate was 14.9% (4 pts) at 1 month follow-up period. A secondary intervention was required in 3.6% of patients (1 pt). Unilateral graft limb occlusion was found in 1 patient (3.7%) during follow up.

Conclusion

Endovascular aortic repair (EVAR) using a separated aortic stent-graft system revealed a safe and high degree of technical success for abdominal aortic aneurysms (AAAs) with a very low peri-operative morbidity and mortality rate for short- and mid-term outcome.

Monday, September 19, 2011 (Continued)

09.00 h. – 10.15 h.

Sixth Scientific Session

Endovascular Repair of Arterial Aneurysms

09.40 Thoracic Endovascular Aortic Repair with “Seal Thoracic Flex” Stent Grafts: Early Clinical Outcome: Sung-Gwon Kang, MD, PhD¹, Lydia Purba, MD², RWM Kaligis, MD, FICA³, Iwan Dakota, MD, FICA³, ¹Department of Radiology, SNUBH and Vascular Division, NCV Harapan Kita Hospital, Jakarta, Indonesia; ²Department of Radiology and ³Vascular Division, Department of Cardiology and Vascular Medicine, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Purpose

We reviewed our experience with SEAL stent grafts in the repair of a variety of thoracic aortic lesions. The objective of this study was to assess the early- and mid-term outcomes of this therapy.

Methods

From 2007 to 2011, SEAL stent grafts (S&G Biotech, Inc. Seongnam, Korea), were inserted in 647 patients with an atherosclerotic aneurysm, dissection, traumatic pseudoaneurysm rupture, PAU, mycotic aneurysm, IMH, and fistula. The endoprotheses were Nitinol wire braided stent structure covered by a ultra-thin polyester fabric.

Results

Risk of the patients were ASA class IV or V in 110 patients. Mean procedure time was 33 minutes. Placement of stent grafts was technically successful in 632 of the 647 patients (97.7%). Three patients (0.4%) died within 30 days after treatment, 2 had a cerebral infarction, and 2 had onset of paraplegia or paraparesis. Endoleaks were observed at 1 month in 4 patients. During the mean follow-up period, 2 patients was converted to operation because of infection, and dissection progression.

Conclusions

Our early experience with elective and emergency thoracic endovascular aortic repair using SEAL thoracic stent-graft provided therapeutic benefits to high-risk patients. Endoleaks and stent-graft migrations were the factors most commonly responsible for the technical failure. More follow-up data collection is warranted for evaluating of the efficacy of this new device.

Monday, September 19, 2011 (Continued)

09.00 h. – 10.15 h.

Sixth Scientific Session

Endovascular Repair of Arterial Aneurysms

09.50 Endovascular Repair of Acute Type B Aortic Dissection: Early Results and Aortic Wall Changes: Sung-Gwon Kang, MD, PhD¹, Lydia Purba, MD², Iwan Dakota, MD, FICA³, RWM Kaligis, MD, FICA³, Yoon Soon Won, MD⁴, Keun Her, MD⁴, Young Woo Park, MD⁵, ¹Department of Radiology, Seoul National University Bundang Hospital, Seoul, Korea and Vascular Division, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia; ²Department of Radiology and ³Vascular Division, Department of Cardiology, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia; ⁴Thoracic and Cardiovascular Surgery, Soonchunhyang University, Bucheon Hospital, Korea; ⁵Thoracic and Cardiovascular Surgery, Soonchunhyang University Gumi Hospital, Korea.

Objective:

This study assessed the early results of endovascular repair of acute type B aortic dissection and the aortic wall change following endovascular repair.

Methods

From July 2008 to May 2009, pre-operative and follow-up computed tomography (CT) scans were evaluated in 5 patients with acute type B aortic dissection, underwent stent graft implantation within 13 days of the onset of dissection (mean: 7 days; range: 3–13). The whole lumen (WL), true lumen (TL) and false lumen (FL) diameters were measured at the proximal (p), middle (m), and distal (d) third of the descending thoracic aorta.

Results:

The study included four men and one woman with an average age of 59.4 ± 20.1 years (range: 37–79 years). The follow-up CT was evaluated at 1 and 6 months. The primary tear was sealed completely in all patients. No paraplegia, paresis or bowel ischemia occurred and no patient died. No endoleaks developed in any patient during follow-up. TL diameters increased from 20.4 to 33.5 mm in the proximal third (p/3), from 19.5 to 29.8 mm in the middle third (m/3), and from 15.2 to 23.5 mm in the distal third (d/3). The FL diameters decreased from 18.7 to 0 mm in p/3, from 15.4 to 0 mm in the m/3, and from 21.4 to 8.7 mm in the d/3. Changes in the TL diameter were statistically significant in the middle and distal aorta and those in FL diameter were not statistically significant. The decrease in the WL after repair showed but not statistically significant. In three patients, the false lumen disappeared completely in follow-up CT at 6 months. Two patients had patent false lumens, not thrombosis.

Conclusion

Early results showed that endovascular repair was effective in treating acute type B aortic dissection, and endovascular repair promoted positive aortic wall changes.

Monday, September 19, 2011 (Continued)

10.30 h. – 11.30 h.

Seventh Scientific Session

Carotid Stenting and Vascular Surgery

This session provides the advances in carotid stenting (CS), carotid endarterectomy (CEA) vs. CS in ischemic stroke, the necessity of perforator vein surgery, and collagen patch for the control of bleeding during vascular surgery.

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10.30 Is Perforator Vein Surgery Necessary? SEPS for Chronic Venous Insufficiency Due to Residual Incompetent Perforators: Yuji Hoshino, MD, Eri Masuyama, MD, Hiroyuki Ito, MD, Kenichiro Okadome, MD; Section of Vascular Surgery, Saiseikai Fukuoka General Hospital, Fukuoka, Japan.

Background

Subfascial endoscopic perforator surgery (SEPS) is a minimally invasive technique performed on patients with advanced chronic venous insufficiency (CVI). Although SEPS has been accepted as an improved treatment concept in the surgical treatment of perforator vein insufficiency, the role of perforator surgery remains still unclear in the management of patients with chronic venous insufficiency. Incompetent perforator veins (IPV) may become competent following superficial venous surgery, but this is not invariable. In the ESCHAR study one third of limbs with perforator vein insufficiency became competent after superficial venous surgery and compression, but 12% of the legs developed new IPV. Two thirds of the patients therefore had residual IPV, suggesting a mechanism by which SEPS might improve the outcome.

Objectives

The aim of this study was to investigate the clinical results of SEPS in patients with CVI due to residual IPV.

Methods

The clinical data of seven patients (7 limbs) who underwent 2-Port SEPS from November 2009 to February 2011 were analyzed. All 7 patients had previous vein surgery (6 strippings, 1 sclerotherapy, 1 unknown). Seven limbs were classified, 2 as C5 (healed ulcer), 4 as C4b (lipodermatosclerosis), and 1 as C4a (dermatitis).

Results

Clinical improvement was seen in all cases. There were no post-operative complications. During a mean follow-up period of 10 months (range, 2-19 months), no recurrent skin changes were observed.

Conclusions

Residual IPVs may be a cause of advanced skin changes and recurrent leg ulcers. SEPS technique has the advantage of easily reaching toward the IPV compared to direct incision. SEPS can be a safe and highly effective treatment for patients with CVI due to IPVs. Long-term study is needed to define benefits of SEPS in patients with IPVs. Meanwhile we believe that the present results support future use of SEPS in CVI patients with IPVs.

Monday, September 19, 2011 (Continued)

10.30 h. – 11.30 h.

Seventh Scientific Session

Carotid Stenting and Vascular Surgery

10.40 **Carotid Stenting with Embolic Protection: Single-Center Experience:** Balázs Nemes, MD, PhD, Kálmán Hüttl, MD, PhD, Heart Center, Semmelweis University, Budapest, Hungary.

Background and Objectives

We present our experience with carotid stent placement using protection devices.

Methods

We retrospectively studied 1465 consecutive patients who underwent protected carotid stenting between 2003 and 2009. Rates of peri-operative transient ischemic attack (TIA), stroke, and death were analyzed. We investigated the impact of age and stent design on peri-operative neurologic adverse events.

Results

Technical success was achieved in 96.9% (1420/1465) of the patients. Access site complication rate was 2.59% (38), 28 patients (1.9%) required surgery. Twenty-nine patients suffered peri-operative stroke (1.98%), five patients (0.34%) died. The stroke/death ratio was 2.32%. We found significantly less TIA in patients with restenosis ($p=0.003$), octogenarians had higher TIA ($p=0.028$) and stroke ($p<0.001$) rate.

Conclusion

Carotid stent placement using protection devices was found to be a safe and effective procedure with a relatively low incidence of peri-procedural complications. Octogenarians had a higher neurological complication rate.

Monday, September 19, 2011 (Continued)

10.30 h. – 11.30 h.

Seventh Scientific Session

Carotid Stenting and Vascular Surgery

10.50 TachoComb Surgical Collagen Patch for Control of Bleeding in Vascular Surgery—A Randomized Controlled Study: Teppei Toya, MD, Makoto Sumi, MD, FICA, Kota Shukuzawa, MD, Koji Maeda, MD, Kenjiro Kaneko, MD, Hiroki Ohta, MD, FICA, Katsunori Tanaka, MD, Koji Kurosawa, MD, Shigeki Hirayama, MD, Hiromasa Tachihara, MD, Naoki Toya, MD, FICA, Yuji Kanaoka, MD, FICA, Hitoshi Sakuda, MD, Atsushi Ishida, MD, FICA, Takao Ohki, MD, PhD, FICA, Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology*; Chairman, Department of Surgery and Chief, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background and Objectives

Prolonged bleeding and increased blood loss during vascular reconstruction, presents a risk particularly for patients with antiplatelet agents, systemic heparinization, and severe atherosclerosis. In this study, we investigated whether the use of surgical collagen patch with a dry layer of human coagulation factors fibrinogen and thrombin (TachoComb, CSL Bering) would reduce blood loss and the time to hemostasis in vascular surgery.

Methods

TachoComb consists of equine collagen in a sponge-like sheet coated on one side with human fibrinogen and bovine thrombin. Hemostasis of the vessel was influenced by various factors including suture length, condition of vessel and prosthetic graft. We investigated hemostasis of the common femoral arteries inserted 12 Fr to 24 Fr sheaths in endovascular abdominal aneurysm repair (EVAR). Thirty-one EVAR patients were randomized to use TachoComb (Tacho group, n=15), or not to use TachoComb (control group, n=16) after primary suturing for hemostasis of the common femoral arteries.

Results

The time to hemostasis in the Tacho group was significantly shorter compared to the time in the control group (39±45 vs 166±136 sec, p<0.01). Furthermore, the Tacho group resulted in significantly less blood loss compared to the control group (1.9±1.7 vs 7.2±4.6 mL, p<0.01). However, there was no statistical difference in total operative time and blood loss. In both groups, stenoses or pseudo-aneurysms of the common femoral arteries were not observed by computed tomography image at 1 and 6 months after surgery.

Conclusion

This randomized controlled study demonstrates that TachoComb is effective at reducing the time to hemostasis in suturing of the common femoral arteriotomy in EVAR. TachoComb may be an easy-to-use vascular sealant with safety and efficacy in vascular surgery.

Monday, September 19, 2011 (Continued)

10.30 h. – 11.30 h.

Seventh Scientific Session

Carotid Stenting and Vascular Surgery

11.00 CEA vs CAS in Ischemic Stroke: What does Current Evidence Say?

Prof.Dr.med. Rasjid Soeparwata, MD, Division of Vascular and Endovascular Surgery, Faculty of Medicine, University of Indonesia/RSCM-Kencana, National Cardiac Center, Harapan Kita Hospital, Jakarta, Indonesia.

Stroke is the leading cause of death after cancer and cardiac disease, and the number one cause of long life disability in developed and developing countries. Symptoms ranging from "mild" transient Ischemic attack to "severe" ipsilateral stroke are caused mostly by stenosis at the carotid artery bifurcation. It is estimated that up to 75% of ischemic stroke cases originating from the lesion along the carotid artery. Therefore, correction of the stenosis is an important measure to prevent or treat stroke. Currently two approaches are acknowledged in correcting stenosis in the carotid artery-i.e., carotid endarterectomy (CEA) and carotid artery stenting (CAS).

Carotid endarterectomy is a surgical technique of removing plaque, which has been used for more than 60 years in symptomatic patients with carotid occlusive disease. Now, the introduction of minimally invasive procedures shifts the trend towards CAS. Nevertheless, since findings which support CAS in CAVATAS study, data supporting the efficacy to replace CAS remains sparse. Many studies such as SPACE and EVA-3S failed to prove that such benefit exists. More recent studies, such as CREST also found that despite similar estimated 4-year overall primary outcome (all causes of death; stroke and myocardial infarction), CEA is superior to CAS in preventing stroke (Hazard Ratio, 1.50; $p=0.03$), the main objective in performing this procedure. Systematic review and meta analysis conducted by Murad, et al, is also in line with CREST findings, that CAS increased the risk of stroke compared to CEA (relative risk [RR] 1.45; 95% confidence interval [CI] 1.06-1.99; $I^2=40\%$). Therefore, it is very reasonable if 2011 ASA, ACCF, AHA, AANN, AANS, ACR, ASNR, CNS, SAIP, SCAI, SIR, SNIS, SVN, and SVS Guidelines on the Management of Patients with Extracranial Carotid and Vertebral Artery Disease recommends that CAS should be treated as an alternative for CEA in a very limited group of patients with average or low risk of complications associated endovascular interventions. Moreover, CEA is also regarded as the gold standard for stroke prevention.

In Indonesia, the burden of carotid artery stenosis appears to be overlooked due to lack of active findings through screening and other early detection measures. We strongly believe that the current data is only a small tip of a huge iceberg below. Several patients with recurrent TIAs or strokes, who underwent a CEA procedure in our hospital, have shown promising results during a two year follow-up period. Thus, we urge policy makers to endorse the presence of carotid screening and CEA service in Indonesia, considering its high effectiveness and low cost benefit index.

Monday, September 19, 2011 (Continued)

11.30 h. – 12.30 h.

Eighth Scientific Session

Current Status and Future Horizons of Vascular Surgery

A Special Lecture

This special lecture provides an expert, in-depth view on the current status and future horizons of vascular surgery.

Introduction By:

John B. Chang, MD, FACS, FICA, Program Chairman

Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Presentation By:

Takao Ohki, MD, PhD, FICA

Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology*; Chairman, Department of Surgery and Chief, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Although the first Endovascular Aneurysm Repair (EVAR) in Japan was performed in the mid 90s, EVAR was not widely performed due to lack of a government approved endograft. Lack of approval meant lack of reimbursement and therefore, with the exception of a handful of homemade devices EVAR was hardly performed. In 2006, the Zenith endograft (Cook) won approval for the first time in Japan which was followed by the Excluder (2007, WL Gore) and the Powerlink (2008, Endologix).

At Jikei University, during the last 5 years since we launched the vascular program, we have performed a total of 1,409 aortic endografts including 942 EVARs, 401 TEVARs and 66 fenestrated/branched endograft for thoracoabdominal aneurysms. Of note, is that there was only 1 (0.1%) in-hospital mortality following 942 EVARs. Also, noteworthy is the fact that only 3-4 AAA repairs were performed annually at Jikei prior to the launch of the endovascular program.

EVAR and TEVAR has definitely been a boost for many vascular programs and also has been an entry path for many vascular surgeons to the endovascular field. The future of vascular surgery is promising, not only due to the aging population and increasing vascular pathology, but we have successfully embraced the ticket to the next century, one that the cardiac surgeons had conceded to the cardiologists. During this presentation, we will summarize our endovascular program activities with special emphasis on aortic procedures as well as the future prospect of vascular surgery.

Monday, September 19, 2011 (Continued)

12.30 h. – 13.30 h.

Ninth Scientific Session

Peripheral Arterial Disease

Special Luncheon Lectures

12.30 Pharmacotherapy for Peripheral Artery Disease: A Vascular Surgeon's Perspective: Toshiya Nishibe, MD, PhD, Associate Professor of Surgery, Department of Vascular Surgery, Tokyo Medical University Hospital, Tokyo, Japan.

Background

For the effective pharmacotherapy of peripheral artery disease (PAD) patients with intermittent claudication (IC), it is very important to make evidence-based decisions regarding drug choice. It is also critical to take into account the safety risk profiles by the drugs in relation to the individual patients' severity of PAD and overall health complication.

Methods

Although several oral drugs for PAD are commercially available in Japan, the level of evidence for each is highly variable. High levels of clinical evidence of treatment benefit for patients with IC was found for cilostazol, beraprost and ticlopidine, and in contrast, no reliable evidence was found for sarpogrelate.

When a drug for the treatment of PAD is chosen, it is essential to consider not only the agent's efficacy but also the safety profile in relation to the individual patient's complications. Cilostazol carries a special warning relating patients with congestive heart failure, ischemic heart disease, serious renal disease, and diabetes mellitus.

These considerations are reflected in the current strategy for oral pharmacotherapy in Japan. This strategy also takes into account the practical advantages of beraprost over alternatives. These advantages include fewer complications, warning, and careful administration requirements (notably, no restrictions in renal disease and diabetes mellitus) for beraprost compared with both cilostazol and ticlopidine.

Conclusion

Recently the Japan Medication Therapy for Peripheral Arterial Disease Group (J-Method) reported the current status of PAD drug treatment in Japan¹. The most frequently chosen drug for PAD was beraprost (42%), followed by cilostazol (39%), and aspirin (31%). Beraprost was more likely used for concomitant diseases such as ischemic heart disease and renal failure.

¹Shigematsu, H, Nishibe T, et al. Int Angiol 2010;29(2 Suppl):2-13.

Monday, September 19, 2011 (Continued)

12.30 h. – 13.30 h.

Ninth Scientific Session

Peripheral Arterial Disease

Special Luncheon Lectures

12.45 Peripheral Artery Diseases—A Window to Atherosclerosis: Diagnostic and Management: Iwan Dakota, MD, FICA, Regional Secretary, Membership Committee, International College of Angiology; Director of General Affairs and Human Capital, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Peripheral arterial disease (PAD) is commonly encountered in general practice. Indeed, PAD is a common but under-recognized problem in our daily practice. PAD is one of the manifestations of general atherosclerosis, in which this process extends to all the blood vessels throughout the body. Importantly, PAD is a marker for generalized atherosclerosis and is closely associated with coronary and cerebrovascular disease. The correlation among COronary Artery Disease, CArotid Stenosis, and Limb Ischemia was previously described by DL Clement, which showed a close relationship among them. This COCALIS concepts was adopted by many physicians worldwide. As a physician, one must counsel their patients with CAD, of the possibilities of having PAD and Stroke (carotid stenosis) is high. On the other hand, patients presenting with PAD, we should keep in mind, the risk of CAD and Stroke is high as well. This is emphasized from a holistic point of view. Intermittent claudication is the most frequent symptom of PAD, although the diagnosis of PAD is often overlooked until the patient presents with limb-threatening ischemia. The severity of PAD has been correlated with an increased risk of myocardial infarction, stroke, and cardiovascular death.

Currently, based upon the concept of general atherosclerosis, we can predict which patient has a possibility of having coronary artery disease by performing either non-invasive modalities to screen peripheral artery disease, such as carotid Duplex sonography, ankle brachial index (ABI), flow mediated dilatation (FMD), or invasive modalities such as carotid angiography, renal angiography, lower limb angiography, level of endothelin and nitric oxide. The most simple way to screen PAD is ankle brachial index, which can reflect the possibilities of having CAD for those patient with ABI below normal. Another option, such as like intima media thickness (IMT) of the carotid arteries could be used as a "window" to see coronary artery disease. Many centers perform these non-invasive modalities during a standard medical check-up.

PAD should be recognized as an important marker for cardiovascular disease, but specific therapy directed to the management of PAD manifestations is indicated for most patients. Because PAD is a manifestation of generalized atherosclerosis, the principal issue in medical management of PAD is the development of a treatment plan that modifies known risk factors for atherosclerosis, and its atherothrombotic complications. Risk factor modification as the initial goal in the management of PAD is very crucial. Exercise, especially supervised exercise, is recommended as the next strategy. Medical therapy, including anti-platelets, anti-hypertensive, lipid lowering, vasodilators, growth factors, prostaglandins, and prostaglandin analogues, have been suggested for this indication. However, the treatment outcome with these agents are variable, and none are currently approved beyond investigational purposes. Selected patients with disabling claudication symptoms may benefit from either surgical therapy or catheter-based interventions. Most PAD patients do not require revascularization procedures. The recognition and diagnosis of PAD, combined with its appropriate medical management, may well reduce the overall risk of cardiovascular morbidity. When diagnosed early, both exercise and pharmacotherapy can ameliorate symptoms of claudication, augment functional performance, and improve quality of life.

Monday, September 19, 2011 (Continued)

13.30 h. – 14.30 h.

Tenth Scientific Session

Coronary Artery Disease

The educational objectives of this session are to discuss the various aspects related to coronary artery disease including ankle-brachial index, monoclonal biomarker antibodies, microvascular obstruction, climate, and time factors.

13.30 **Correlation of Ankle-Brachial Index with Severity of Coronary Artery Disease—A Preliminary Study:** Erwin Mulia, MD¹, Febtusia Puspitari, MD¹, Taofan², Hananto Andriantoro, MD, FICA², Iwan Dakota, MD, FICA², RWM Kaligis, MD, FICA², Ismoyo Sunu, MD, FICA², Ganesja M. Harimurti, MD³; ¹Residents, Department of Cardiology and Vascular Medicine, University of Indonesia, Jakarta, Indonesia; ²Consultants, Vascular Division, National Cardiovascular Center, Harapan Kita Hospital and ³Head, Department of Cardiology and Vascular Medicine, University of Indonesia, Jakarta, Indonesia.

Background

Previous studies have shown that patients with low Ankle-Brachial Index (ABI) (< 0.9) often present with coronary atherosclerosis, and are at increased risk for adverse cardiovascular events. However, there were no studies showing the correlation of high ABI with the severity of coronary atherosclerosis.

Objectives

To investigate the correlation of high ABI with the severity of coronary atherosclerosis.

Methods

Doppler-measured ABI was performed in 30 stable angina pectoris patients who underwent elective coronary angiography. Analysis of variance and the relation of ABI to Gensini score examined the correlation of ABI with the extent of coronary artery disease by Spearman rho correlation coefficient.

Results

Using the Spearman rho, it was found that neither right nor left ABI have a significant correlation with Gensini score, with correlation coefficient for right ABI and left ABI are 0.332 (P=0.073) and 0.294 (P=0.305) respectively. Further analysis showed that although there is only weak correlation between ABI and Gensini Score, most subjects with a high ABI were age 51-60 years old and did not have a significant association with hypertension (P=0.399), diabetes (P=0.404), and smoking (P=0.278).

Conclusion

From this preliminary study, it was found that there is a weak correlation between ABI and the severity of coronary atherosclerosis, further investigation was needed with more subjects.

Monday, September 19, 2011 (Continued)

13.30 h. – 14.30 h.

Tenth Scientific Session

Coronary Artery Disease

13.40 Novel Monoclonal Biomarker Antibody Fragmentation Collagen Type IV to Detect Acute Myocardial Infarction Related Perviromonas Gingivalis Infection: Ketut Muliarta, MD, PhD¹, Mulyohadi Ali, MD, PhD², Djanggan Sargowo, MD, PhD³; ¹Biomedical Laboratory, ²Pharmacology Laboratory, and ³Biochemistry Laboratory, Medical Faculty, Brawijaya University, Malang, East Java, Indonesia.

Background

The objective of this study was to detect acute myocardial infarction (AMI) in blood samples by using biomarkers for monoclonal antibody collagen Type IV related perviromonas gingivalis.

Objectives

Rupture of atherosclerotic plaque initially occurs through the degradation of collagen Type IV. Infection is one of the most important risk factor in AMI.

Methods

The design of this research was experimental, in-vitro with a descriptive with an analytic cross-sectional design. The subjects were (n=4) healthy people and (n=12) AMI patients. To show the expression of MMP-9 and the fragmentation of collagen Type IV, we used western blotting technique. To produce cell lymphocyte we used mice with subcutaneous immunization, and continued fusion of myeloma cells to form hybridoma. Western blotting test and Elisa technique was used, continued by insertion of a cloned selection of intra-peritoneal forming the ascites. To evaluate the monoclonal antibody fragmentation collagen type IV, we used the Elisa technique.

Results

The results of MMP-9 obtained showed band 92 kDa, and fragmentation collagen Type IV-band 60-80 kDa. The test for reaction to biomarker monoclonal antibody fragmentation of Collagen Type IV, blood samples 1 to 12 were positive for AMI.

Conclusion

In conclusion, the biomarkers for Collagen Type IV monoclonal antibody fragmentation were AMI positive.

Monday, September 19, 2011 (Continued)

13.30 h. – 14.30 h.

Tenth Scientific Session

Coronary Artery Disease

13.50 Early Microvascular Obstruction after Acute Myocardial Infarction Predicts Clinical Long-Term Outcome: Data from a 5 Year Follow-up: G. Klug, MD¹, S. Schenk, MD¹, A. Mayr, MD², M. Nocker, MD¹, T. Trieb, MD², M. Schocke, MD², W. Jaschke, MD², Otmar M. Pachinger, MD, FICA¹m B. Metzler, MD¹; ¹University Clinic of Internal Medicine III and ²Department of Radiology I, Medical University Innsbruck, Innsbruck, Austria.

Aims

Early and late microvascular obstruction (MVO) assessed by cardiac magnetic resonance imaging (CMR) and prognostic markers for combined clinical endpoints after acute myocardial infarction (AMI). However, there is a lack of studies with long-term follow-up periods (>24 months).

Methods

AMI patients reperfused by primary angioplasty (n=129) underwent MRI at a median of w2 days after the index event. Early MVO was determined on dynamic GD-first-pass images directly after the administration of 0.2mmol/kg bodyweight Gd-contrast agent. Furthermore, ejection fraction (EF, %), left ventricular myocardial mass (LVMM, g), and total infarct size (% of LVMM) were determined with CMR. Clinical follow-up was conducted after a median of 52 months. Twenty-six patients were lost to follow-up. The primary endpoint was defined as a composite (death, myocardial re-infarction, stroke, repeat revascularization, reoccurrence of ischemic symptoms, atrial fibrillation, congestive heart failure, and hospitalization).

Results

Fifty-two pre-defined events occurred during follow-up. Initially 65 patients showed early MVO. Median event free survival was 1176 days in patients presenting without early MVO, and 785 days in patients with early MVO (p=0.02). Patients with early MVO had larger infarcts (22% of LVMM vs. 13%, p=0.002), and a lower EF (39% vs 46%, p=0.006). Early MVO was independently associated with the composite primary endpoint in the multivariable Cox regression analysis adjusting for age, ejection fraction, and infarct size. The presence of early MVO was identified as the strongest independent predictor for the occurrence of the composite endpoint (hazard ratio: 2.21, 95%-CI 1.11-4.76, p=0.015).

Conclusion

Early MVO, as assessed by first-pass CMR is an independent long-term prognosticator for morbidity after AMI.

Monday, September 19, 2011 (Continued)

13.30 h. – 14.30 h.

Tenth Scientific Session

Coronary Artery Disease

14.00 Factors that Influence the Time-Point of Acute Myocardial Infarction in Winter Tourists: G. Klug, MD, S. Schenk, MD, J. Dörler, MD, H. Alber, MD, Otmar M. Pachinger, MD, FICA, Professor of Medicine; President-Elect and Member, Board of Directors, International College of Angiology; Chief of Cardiology, B. Metzler, MD, University Clinic of Internal Medicine III, Medical University Innsbruck, Innsbruck, Austria.

Background

We have previously shown that the majority of acute myocardial infarctions (AMI) in winter tourists happen within the first two days after arrival at the vacation resort. This sub-study aimed to evaluate different factors that influence the time from the arrival to the onset of AMI symptoms.

Methods

We interviewed 100 patients (mean age: 60.2 ± 10.7) who suffered an AMI during their winter holidays in the area of Tyrol. We assessed the time-point of arrival and onset of symptoms. Further we determined body mass index, training status (hours of activity per week), sea level of symptom-onset, pre-existing heart diseases, and known cardiovascular risk factors.

Results

There was a positive correlation between training status and the time to the onset of AMI ($r=0.33$, $p=0.003$). MIs happened 1.3 days earlier in patients who performed less than 2.5 hours of sports per week (2.3 days [1.4-4.3] vs/ 3.6 days [1.8-5.5] $p=0.01$). There was an inverse correlation between the sea level on which the AMI occurs and the time to the onset of AMI ($r=0.197$, $p=0.04$). AMIs happened earlier above 1200m (2.3 [1.5-4.5 days) than below 1200 m (3.1 [1.7-5.4] days, $p=0.044$). In men AMIs occurred earlier than in women (median 2.5 days; [quartiles: 1.5-4.7] vs. 3.6 days [2.2-6.1] $p=0.01$). Age and BMI did not correlate with the time to first symptoms. Multivariate analysis revealed training status and male sex as the only independent predictors of the time to the onset of AMI (model: $r=0.358$, $p=0.001$). We could not detect any influence of either pre-existing CAD or the absolute number of cardiovascular risk factors on the time point of AMI.

Conclusion

Predictors for an early AMI during winter holidays are male sex and a lack of regular physical activity.

Monday, September 19, 2011 (Continued)

13.30 h. – 14.30 h.

Tenth Scientific Session

Coronary Artery Disease

14.10 Occurrence of Acute Myocardial Infarction in Winter Tourists: Data from a Retrospective Questionnaire: G. Klug, MD, S. Schenk, MD, J. Dörler, MD, H. Albert, MD, Otmar M. Pachinger, MD, FICA, Professor of Medicine; President-Elect and Member, Board of Directors, International College of Angiology; Chief of Cardiology, B. Metzler, MD, University Clinic of Internal Medicine III, Medical University Innsbruck, Innsbruck, Austria.

Purpose

In Austria every year 15 million winter tourists arrive from November to April. Acute myocardial infarction (AMI) is the leading cause of death in western countries, and may be triggered by physical exertion. The study aimed to evaluate the relationship of first physical activity and the onset of AMI in winter tourists visiting the Tyrolean Alps.

Methods

We carried out a retrospective analysis of consecutive patients (pts.) admitted to the Department of Internal Medicine III at the Medical University of Innsbruck with a diagnosis of acute myocardial infarction (AMI) between 2006 and 2010. We identified n=170 pts. from abroad between November and April as potential candidates for the questionnaire. So far, we successfully contacted n=93 pts (mean age: 61 ± 10 years; 16% female; 71% STEMIs, 23% known CAD). We assessed the locations of visit (sea level), duration of stay, and time-point of arrival, first sport activity, and onset of symptoms. Furthermore, we asked for the kind of activity during AMI, training status, preexisting heart disease and medication as well as cardiovascular risk factors.

Results

Of those patients, 56% of AMIs occurred within the first two days of physical activity (first two days versus others: $Z=52.747$; $p<0.0001$). In tourist who suffered AMI during or within one hour after cessation of activity, (n=46; 50%), the mean time from the start of the activity to the onset of symptoms was 1.9 ± 1.7 hours, and 52% of patients were performing less than 2 hours of sports per week, regularly before their vacation. Although, the mean planned vacation time was 8 ± 4 day, only 18% of myocardial infarctions happen after day 4 of the vacation. Moreover, 40% of the tourists suffered their AMI within the arrival day, or the day after (versus others: $Z=22.753$; $p<0.0001$).

Conclusion

The majority of AMIs in tourists occurs within the first 2 days after arrival and within the first 2 days of physical activity.

Monday, September 19, 2011 (Continued)

14.30 h. – 16.00 h.

Eleventh Scientific Session

Peripheral Vascular Disease

The educational objectives of this session are to discuss the recent developments in the treatment of peripheral vascular disease with special reference to angioplasty and multidisciplinary management of critical limb ischemia, blood pressure changes after closing of patent ductus arteriosus, and pulmonary arteriovenous malformations.

14.30 Surrogates of Large Artery versus Small Artery Stiffness and Ankle-Brachial

Index: Päivi Korhonen, MD, PhD, FICA¹, Kari Syvänen, MD², Pertti Aarnio, MD, PhD, FICA³, Professor of Surgery; Member, Board of Directors and Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; ¹Central Satakunta Health Federation of Municipalities, Harjavalta, Finland; Department of Family Medicine, University of Turku, Turku, Finland; ²Department of Surgery, Turku University Hospital, Turku, Finland; ³Chief, Department of Surgery, Satakunta Central Hospital and University of Turku, Pori, Finland.
Satakunta Hospital District, Pori, Finland.

Background

Peripheral artery tonometry (PAT) is a novel method for assessing arterial stiffness of small arteries. Pulse pressure can be regarded as a surrogate of large artery stiffness. When ankle-brachial index (ABI) is calculated using the higher of the two ankle systolic pressures as denominator (ABI-higher), leg perfusion can be reliably estimated. However, using the lower of the ankle pressures to calculate ABI (ABI-lower) identifies more patients with isolated peripheral arterial disease (PAD) in ankle arteries.

Objectives

To compare surrogates of large and small artery stiffness and different calculations of ABI.

Methods

We measured ABI from 66 cardiovascular risk subjects in whom borderline peripheral arterial disease (ABI 0.91 to 1.00) was diagnosed four years earlier. Blood pressure was measured from brachial arteries, and PAT device was used to assess endothelial function of digital arteries.

Results

Using ABI-lower to diagnose PAD yielded two-fold higher prevalence of PAD than using the ABI-higher. Endothelial dysfunction was diagnosed in 15/66 (23%) subjects. In a bivariate correlation analysis, pulse pressure was negatively correlated with ABI-higher ($r = -0.347$, $p = 0.004$) and with ABI-lower ($r = -0.424$, $p < 0.001$). PAT hyperaemic response was not significantly correlated with either ABI-higher ($r = -0.148$, $p = 0.24$) or with ABI-lower ($r = -0.208$, $p = 0.095$).

Conclusion

Elevated pulse pressure is strongly correlated to PAD, whereas, small artery endothelial function as measured by PAT is related to some other factors controlling vascular tone.

Monday, September 19, 2011 (Continued)

14.30 h. – 16.00 h.

Eleventh Scientific Session

Peripheral Vascular Disease

14.40 Clinical Impact of Successful Below-the-Knee Angioplasty in Critical Limb Ischemia (One Year Clinical Follow-Up): Zoltán Ruzsa, MD¹, Ferenc Kuti, MD², Balázs Nemes, MD, PhD², Károly Tóth, MD², István Koncz, MD², Nándor Kovács, MD², Prof. Kálmán Hüttl, MD¹, Prof. Béla Merkley, MD¹; ¹Department of Cardiology, Semmelweis University, Cardiology Center, Budapest, Hungary; ²Invasive Cardiology, County Hospital, Kecskemét, Hungary.

Objectives

The objective of this study was to investigate the clinical impact of the below-the-knee percutaneous angioplasty (BTK PTA) for restoring straight inline arterial flow in patients with critical limb ischemia (CLI).

Background

Surgical tibial bypass for CLI is associated with significant morbidity, mortality, and graft failure, whereas percutaneous angioplasty and stenting have promising results.

Methods

The clinical and angiographic data of 119 consecutive patients with CLI treated by BTK PTA between 2008 and 2009 was evaluated in a prospective study. All inflow lesions were corrected with angioplasty before the BTK interventions. Patients received daily aspirin, clopidogrel during the procedure. After the procedure all patients were treated with high dose statins and antiplatelet therapy. We examined the one-month and the one-year major adverse cardiac and cerebral events (MACCEs), defined as death, myocardial infarction, stroke, major unplanned amputation, need for surgical revascularization, or major bleeding. Clinical success was defined as relief of rest pain, healing of ulceration and gangrene and preservation of the affected limb.

Results

The mean age of the patients was 70.2 ± 10 years. Below-the-knee angioplasty was attempted in 119 patients with CLI. It should be noted that 74 patient (62%) had diabetic leg syndrome. In 112 limbs (94.1%), straight inline flow was restored to at least one tibial vessel. Rotational atherectomy was performed in 3 (2.7%) patients. Stents were used in 17 patients (14.2%). Technical success was 94.1 % for de novo lesions, and we had two in hospital MACEs (1.4%). Relief of rest pain, avoidance of amputations were seen in 111 (93.3%) patients and healing of ulcerations and gangrene was observed 62 patients (88.6%) of patients with CLI. Minor planned amputation (toe) was performed in 26 patients (21.8%). Major unplanned amputation was performed in 12 patients (10%) at the first month and in 22 patients (17.6%) at the first year after the intervention. The one year mortality rate was 28.6% (n=2) between the patients underwent major amputation and 8.9 % (n=14) in patients with limb salvage ($p < 0.05$). MACE occurred in 20 patients (95%) with amputation and in 15 patients (15.6%) without major amputation at one year ($p < 0.001$). Major amputation was performed in 11 patients (9.8%) at 1 month and in 23 patients (20%) at 12 month after successful, and in one patient (14%) at one month and two patients (28.6%) at 12 month after unsuccessful intervention ($p = ns$).

Conclusions

Below-knee stent angioplasty for CLI is a safe and effective procedure. It has promising one year clinical results with overall 81.5% limb salvage and 87.5% survival. Successful angioplasty did not improve patient survival and limb preservation significantly while patient undergoing limb amputation has increased one year mortality and MACE.

Monday, September 19, 2011 (Continued)

14.30 h. – 16.00 h.

Eleventh Scientific Session

Peripheral Vascular Disease

14.50 Pulmonary Arteriovenous Malformations: A Rare Cause of Cyanosis in Children with its Complications and Management: Professor Ganesja Mulia Harimurti, MD¹, Professor; Consultant of Pediatric Cardiology and Congenital Heart Disease; Vebiona K. Prima Putri, MD², Anna Ulfah Rahajoe, MD³, Poppy S. Roebiono, MD³, Indriwanto Sakidjan, MD³, Ismoyo Sunu, MD, FICA⁴; ¹Consultant, Pediatric Cardiology and Congenital Heart Disease, National Cardiac Center Harapan Kita; Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia; Head, Department of Cardiology and Vascular Medicine, University of Indonesia, Jakarta, Indonesia; ²Department of Cardiology and Vascular Medicine, University of Indonesia, Jakarta, Indonesia; ³Consultants in Pediatric Cardiology and Congenital Heart Disease, National Cardiac Center Harapan Kita, Department of Cardiology and Vascular Medicine, University of Indonesia, Jakarta, Indonesia; ³Consultant, Vascular Division, National Cardiac Center Harapan Kita, Department of Cardiology and Vascular Medicine, University of Indonesia, Jakarta, Indonesia.

Pulmonary arteriovenous malformations (PAVMs) caused by abnormal communications between pulmonary arteries and pulmonary veins are most commonly congenital in nature. Although these lesions are quite uncommon, they are an important part of the differential diagnosis of cyanotic problem. An 8-year-old boy presented with bluish discoloration on his lips and fingers. Chest radiograph revealed oval mass of uniform density in upper lobe of right lung. Computed tomography (CT) pulmonary angiogram showed large pulmonary arteriovenous malformation in the upper lobe of right lung. Pulmonary angiogram confirmed a large arteriovenous malformation with several feeding arteries. He had brain abscesses as a complication of PAVMs and underwent craniotomy with good clinical outcome. Part of the multiple arteriovenous malformations were already occluded with Amplatzer vascular plug (transcutaneous embolotherapy) in several sequences. The patient afterwards was in good clinical condition and further embolotherapy was scheduled.

Monday, September 19, 2011 (Continued)

14.30 h. – 16.00 h.

Eleventh Scientific Session

Peripheral Vascular Disease

15.00 Comparison of Two Automatic Ankle-Brachial Pressure Index Measurements: Febtusia Puspitasari, MD¹, Erwin Mulia, MD¹, Taofan, MD², Hananto Andriantoro, MD, FICA², Iwan Dakota, MD, FICA², RWM Kaligis, MD, FICA², Ismoyo Sunu, MD, FICA², Ganesja M. Harimurti, MD³; ¹Department of Cardiology, University of Indonesia, Jakarta, Indonesia; ²Consultants, Vascular Division, National Cardiovascular Center Harapan Kita, Department of Cardiology and Vascular Medicine, University of Indonesia, Jakarta, Indonesia; ³Head, Department of Cardiology and Vascular Medicine, University of Indonesia, Jakarta, Indonesia.

Background

The ankle-brachial blood pressure index (ABI) is a simple and noninvasive measurement of the patency of lower extremity arteries and could predicts cardiovascular morbidity and mortality, but the usage of Doppler-measured ABI (Dop-ABI) is limited because of time, required training and costs. We hypothesized that ABI could be measured accurately by automatic blood pressure devices (Auto-ABI) other than Doppler method (Dop-ABI).

Objectives

To clarify whether ABI could be measured accurately by automatic blood pressure device.

Methods

We compared 3 different ABI measurement (Doppler, Omron and Dynamap) results from 65 patients which the Doppler ABI examination is the gold standard. To assess whether results using OMRON or Dynamap can be compared with Doppler examination, the Cronbach alpha and Intraclass Correlation Coefficient (ICC) test were used while the significancy were set on alpha = 0.05.

Results

Based on the statistical analysis, ABI results from Doppler, OMRON and Dynamap have relatively small variance coefficient from 0.02-0.04 meaning that all measurements have good accuracy. When OMRON compared with Doppler, measurement of right ABI has a moderate (0.489) and significant ($P < 0.05$) correlation. As for measurement using Dynamap, the statistical analysis shows that for right ABI, Dynamap measurement is reliable with correlation coefficient 0.437 and $P = 0.011$.

Conclusion

Automatic blood pressure devices can be recommended as reliable methods for ABI measurement.

Monday, September 19, 2011 (Continued)

14.30 h. – 16.00 h.

Eleventh Scientific Session

Peripheral Vascular Disease

15.10 Reducing Amputation Rate in Critical Limb Ischemia Patients through a Multidisciplinary Management: Professor Aurel Andercou, MD, FICA, Professor of Surgery; Vice President, International College of Angiology; Editor, *International Journal of Angiology*; Aurel Mironiuc, MD, Octavian Andercou, MD, FICA, Horatiu Silaghi, Bogdan Stancu, Octavian Budiu, MD, Otilia Barbos, MD; Second Surgical Clinic, University of Medicine and Pharmacy "Iuliu Hatieganu", Cluj Napoca, Romania.

Purpose

The frequency of major amputation is increasing worldwide. Over 90% of amputations are due to vascular disease. According to TASC, at 1 year, 35 patients with critical limb ischemia will need an amputation. In vascular centers the trend is to be as aggressive as possible, to reduce primary amputation to a minimum and repeat amputation to zero.

Materials and Methods

The study was carried out between September 2007 and December 2010. It consists of 200 patients with critical limb ischemia admitted in the Vascular Surgical Department. Patients have been divided in 4 groups: primary amputation, repeat amputation, successful revascularization, and failed revascularization. For each group we designed a specific data sheet.

Results

The study consist of three parts. In the first part of the study, during the first year, on 100 patients we managed the patients in the standard fashion. At the end of this period the rate of primary amputation was 56% and repeat amputation 24%. Explanation was that the patients were old age (mean 65, with a maximum of 88), most of them were smokers (over 69%), and have comorbidities (diabetes-50%, hypertension-74%). Another negative factor was the advanced stage of the disease, more than 76% of patients being in stage IV (after Leriche). By this means, the overall amputation rate was almost at an unacceptable level of 80%. In the next stage of the study, by introducing new pre-operative measurements of microcirculation (TcPO₂ and laser Doppler), we were able to reduce the number of primary amputation to 45% and repeat amputation to zero. A more aggressive surgical option has increased the success of revascularization from 18% to 37%. The final, results after 3 years and 200 patients, we stabilized the amputation rate to about 50% and increased revascularization to about 50%. In the end, this means a significant reduced hospital stay and consecutively reduced costs with those patients.

Conclusion

Introducing microcirculatory assessment improves outcome of revascularization, reduces rate of amputation, and improves quality of life of patients with critical limb ischemia.

Monday, September 19, 2011 (Continued)

14.30 h. – 16.00 h.

Eleventh Scientific Session

Peripheral Vascular Disease

15.20 **Spontaneous Lysis in Acute Bilateral Common Iliac Artery Occlusion:** Ismoyo Sunu, MD, FICA¹, Rony M. Santoso, MD², Ismir Fahri, MD², RWM Kaligis, MD, FICA¹, Iwan Dakota, MD, FICA¹, Suko Adiarto, MD¹, Taofan, MD¹, Hananto Andrianto, MD, FICA¹, Ganesja M. Harimurti, MD³; ¹Consultants, Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ²Department of Cardiology and Vascular Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ³Head, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia.

Background

Acute embolic occlusion of a limb artery is a serious limb and life-threatening medical emergency. It requires prompt diagnosis, and appropriate management. Percutaneous intra-arterial thrombolysis, percutaneous mechanical thrombectomy, stenting and surgical embolectomy have all been used to treat acute embolic limb ischemia, but the best treatment strategy remains controversial. We report a case of spontaneous lysis of acute embolic occlusion of the bilateral common iliac artery in diabetic female patient who was initially diagnosed with chronic critical limb ischemia.

Case Report

A 66-year-old female was admitted to our hospital with sudden-onset pain, absent pulses, paresthesia, and pallor both of the lower extremity that had begun 8 hours before admission. She is known to have type 2 diabetes mellitus since 20 years before this presentation. CT angiography of the lower extremity showed total occlusion of the proximal bilateral common iliac artery with massive collaterals. Initially, we performed intra-venous anticoagulation using unfractionated heparin with target of 3 times of normal APTT. Trans thoracal echocardiography showed mobile left ventricular trombus at postero-apikal region with high risk embolized. At day 4, evaluation CT angiography revealed sinificantly improved arterial flow in both common iliac artery along with dramatic clinical improvement. The patient did well with no complications and was clinically stable until three month follow-up.

Conclusion

Acute limb ischemia is life threatening disease that needs immediate revascularization. Although exceedingly rare, spontaneous lysis of acute limb ischemia may occur. Heparinization administration in this case has a remarkable result in clots lysis even though no supporting data is available on the logical explanation regarding the mechanism.

Monday, September 19, 2011 (Continued)

14.30 h. – 16.00 h.

Eleventh Scientific Session

Peripheral Vascular Disease

15.30 Temporal Changes of Blood Pressure before and after Patent Ductus Arteriosus (PDA) Ligation in Extremely Low Birth Weight (ELBW) Infants:

Ranini Sankaran, MD, Qassim Abid, Lauren Sherer, Ashok Kakadekar, Korvangattu Sankaran, MD, Departments of Pediatrics and Physiatry, Royal University Hospital, University of Saskatchewan, Saskatoon, Canada.

Background

The patent Ductus arteriosus (PDA) is a vascular structure that connects the proximal descending aorta to the roof of the main pulmonary artery near the origin of the left branch pulmonary artery. This essential fetal structure normally closes spontaneously after birth. After the first few weeks of life, persistence of ductal patency is abnormal. The physiological impact and clinical significance of the PDA depend largely on its size and the underlying cardiovascular status. The PDA may be "silent" (not evident clinically but diagnosed incidentally by echocardiography), small, moderate, or large. PDA is common in preterm infants; there is a lack of convincing evidence for the most effect treatment. Blood pressure (BP) among infants with PDA shows frequent fluctuations. To our knowledge there is a paucity of information on the evolution of BP and its components before and after PDA closure especially in ELBW infants. It is believed that pulse pressure narrows significantly after PDA closure.

Objective

To characterize changes in systolic, diastolic, and pulse blood pressure before and after PDA ligation in ELBW infants in our nursery.

Design

After approval from the Institutional Ethics Review Board (as part of larger study) and consent, a retrospective data collection of blood pressure and its components from medical records on a daily basis one week prior and two weeks after surgical closure of PDA were carried out. All infants had a functioning indwelling arterial catheter. Readings of systolic and diastolic BPs were collected every four hours in each day including at least one low and high to account for the fluctuations. The management of the infant was by the attending neonatologist and was not altered for the study.

Result

A total of 10 infants were studied. The mean gestational age and birth weight were 25.38 weeks and 866.7 grams. Figure 1 illustrates the temporal changes of systolic and diastolic BP before and after ligation. The percent increase in systolic and diastolic pressure was 32.6% and 12.2% while pulse pressure decreased by 6% only, and can be explained by the larger increase in systolic BP. Table 1 shows the infant characteristics and % BP changes.

Conclusion

A modest temporal increase in BP consistent with growth was noted. However, the pulse pressure after ductal closure did not show a significant decrease that was expected. The mechanisms that determine pulse pressure appear to be long standing and unlikely to be related to back flow and left to right shunt. Clinicians must be aware of this new information.

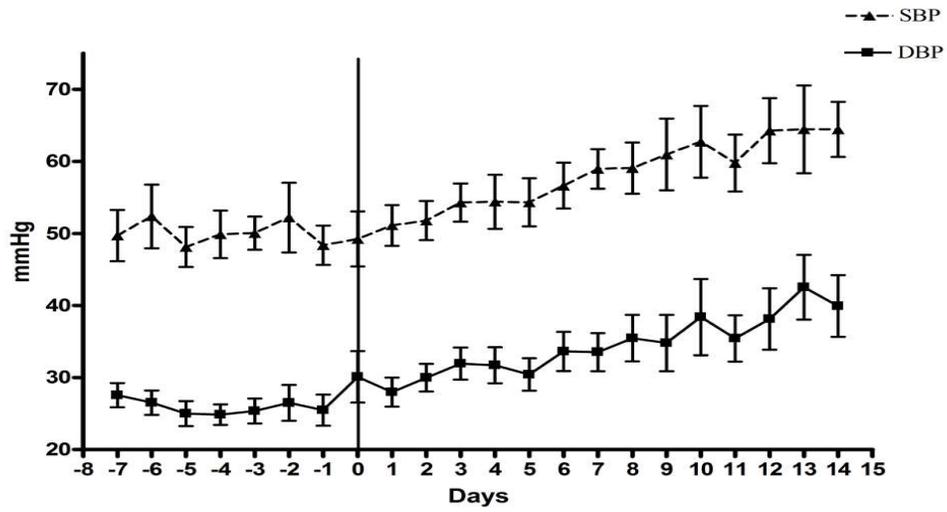


Figure 1: The average (\pm SEM) development of Systolic and Diastolic Blood Pressure (O=operation)

Monday, September 19, 2011 (Continued)

16.00 h. – 17.00 h.

Twelfth Scientific Session

Basic Sciences

This session deals with the role of a high fat diet, and other dietary components on the inflammatory mediators involved in the development of atherosclerosis.

16.00 The Role of Lycopene to Nuclear Factor Kappa BETA (NF-κB) Activities and Intracellular Cell Adhesion Molecule-1 (ICAM-1) Expressions on Leptin-Induced Endothelial Cells: K. Satuman, MD¹, Heni Fatmawati², M. Rasjad Indra¹, Djanggan Sargowo, MD³, ¹Physiology Laboratory, Faculty of Medicine, Brawijaya University, Malang, East Java, Indonesia; ²Biomedical/Histology Laboratory, Faculty of Medicine, University of Jember, Indonesia; ³Saiful Anwar Hospital, Brawijaya University, Malang, East Java, Indonesia.

Background

There is adipocytokine dysregulation on obesity such as amplified leptin, and reduced adiponectin at serum levels. Leptin has proved to increase oxidative stress in endothelial cell. The adipocyte functions as an important secretory organ via *nuclear factor-κ B* (NF-κB) releasing a number of bioactive molecules such as leptin. Lycopene, an antioxidant, is presumed to have the ability to block the atherogenesis mechanism, which is stimulated a pro-inflammatory cytokine and adhesion molecules ICAM-1 by NF-κB. Therefore, the aim of this research was to prove and to determine whether lycopene could decrease the NF-κB and ICAM-1 expression in *Human Umbilical Vein Endothelial Cells* (HUVECs) culture induced by 500 ng/mL leptin.

Methods

In-vitro study used primary culture of the HUVECs and were divided in to 7 groups; there were (1) 0 ng/mL leptin and 0μM lycopene, (2) induced by 500 ng/mL leptin for 12 hours, (3) induced by leptin and lycopene with concentration 10; 25; 40; 55 and 75μM for 12 hours. The identification of NF-κB was applied by using immunocytochemistry compared with ELISA procedure on cell endothelial culture lysate and ICAM-1 expression was measured by using RT PCR.

Result

Results showed lycopene 25μM decreased NF-κB level and ICAM-1 expression significantly in Human Umbilical Vein Endothelial Cells (HUVECs) culture induced by leptin 500 ng/mL.

Conclusion

Leptin was increased NF-κB and ICAM-1 expression in HUVECs culture can decrease with lycopene. The optimum dose of lycopene is 25μM.

Monday, September 19, 2011 (Continued)

16.00 h. – 17.00 h.

Twelfth Scientific Session

Basic Sciences

16.10 The Comparison Amount of Circulating Endothelial Cells (CEC) at Rattus Novergicus Strain Wistar Induced by Various Durations of a High Fat Diet (HFD): Titin Andri Wihastuti, MD, Djanggan Sargowo, MD; Faculty of Medicine; Brawijaya University, Malang, East Java, Indonesia.

Background

Endothelial dysfunction is a systemic disorder and a critical element in the pathogenesis of atherosclerosis and its complications. More recently, the measurement of immunologically defined circulating endothelial cells (CECs) in the peripheral blood is gaining ground as an important and novel technique for assessment of endothelial dysfunction. The presence of CEC caused by classic risk factors for atherosclerosis, alteration of endothelial/subendothelium cellular adhesion molecules, defective binding to anchoring matrix proteins, and cellular apoptosis with decreased survival of cytoskeletal proteins. The classic risk factor of atherosclerosis in this study is hyperlipidemia.

Objectives

To investigate the amount difference of Circulating Endothelial Cells (CEC) at Rattus Novergicus Strain Wistar induced with various durations of a High Fat Diet (HFD).

Methods

This study is a true experimental post test with control group design using 24 mice which was divided in 6 groups. The HFD given by *et libitum* procedure during 2, 4, and 6 months. The parameter in this study were the amount of CEC and H₂O₂ as ROS. The CEC detection obtained from peripher blood, incubated by anti-CD146 antibody and isolated by flowcytometry. H₂O₂ colorimetryc assay performed directly using Anti Rat H₂O₂ ELISA Kit.

Results

The ANOVA test with 99% confidence interval shows significant different in the level H₂O₂ and the amount of CEC (p=0.00). The highest level of H₂O₂ (5873 unit/mL) and CEC (589,60/10.000 cells) was found in 6 months HFD group and the lowest level was found in 2 months HFD group (1076,33/mL for H₂O₂ and 372,10/10.000 cells for CEC).

Conclusion

There was a significant different amount of CEC and H₂O₂ level at induce HFD after 2, 4 and 6 months. It suggests that HFD induces ROS formation and increases the amount of CEC as one of the endothelial dysfunction marker caused by hyperlipidemia as classical atherosclerotic risk factor.

Monday, September 19, 2011 (Continued)

16.00 h. – 17.00 h.

Twelfth Scientific Session

Basic Sciences

16.20 **The Ethanolic Extract of *P. minima* Stimulate NO Release in Vitro and In Vivo—A Poster Presentation:** Nur Permatasari, PharmaD¹, Dian Nugrahenny, MD, ¹Pharmacology Department, Medical Faculty, Brawijaya University, Malang, East Java, Indonesia.

Background

Physalis minima is an important genus of the solanaceae family. In Indonesia, *P. minima* is one of species traditionally used for many diseases, such as treatment of hypertension.

Objectives

The aim of this study was to identify the action of the ethanolic extract of *P. minima* on endothelial cell in vivo and in vitro.

Methods

Isolated aorta preparation of rat and HUVECs culture were used for in vitro study. The isolated aorta was pretreated with the extract before a cumulative dose addition of phenylephrine to observe the maximal effect of vasoconstriction. HUVECs culture was treated with the extract to observe the cytosolic calcium using fluorescence microscope, the active eNOS using confocal microscope, and NO production using ELISA.

Ovariectomized rat were used for in vivo study. After 4 weeks of ovariectomy, OVX rats were received one of three doses of the extract daily, for 4 weeks, respectively. The 8 weeks OVX rats is as a group of control. The amount of endothelial cell was measured using hematoxylin-eosin staining, and the endothelial function was evaluated using bioassay method.

Results

In-vitro study (using isolate organ) showed that extract of *P. minima* was a potent vasodilator and might be act as a non competitive α_1 -adrenergic antagonist. In addition, this extract could also stimulate calcium intracellular signaling, increase active eNOS and nitric oxide production from HUVECs. Study in OVX rats showed that the amount of endothelial cells and acetylcholine-induced vasodilatation was attenuated significantly ($p < 0.05$), whereas those of OVX rats treated with extract of *P. minima* significantly increase compared with OVX rats.

Conclusion

P. minima stimulates NO release via calcium intracellular signaling, and may based on these actions the extract can maintain the endothelial survival.

Monday, September 19, 2011 (Continued)

16.00 h. – 17.00 h.

Twelfth Scientific Session

Basic Sciences

16.30 Circadian Expression of Matrix Metalloproteinase and LDL Receptor Related Protein-1 mRNA in the Aorta Precede that in the Heart: Mohammad Saifur Rohman, MD, PhD¹, Koji Ikeda, MD, PhD², Noriaki Emoto, MD, PhD²; ¹Department of Cardiology and Vascular Medicine, Brawijaya University, Dr. Saiful Anwar Hospital, Malang, Indonesia; ²Division of Cardiovascular Medicine, Department of Internal Medicine, Kobe University Graduate School of Medicine, Kobe, Japan.

¹Department of Cardiology and Vascular Medicine, Brawijaya University, Dr. Saiful Anwar Hospital, Malang, Indonesia; ²Division of Cardiovascular Medicine, Department of Internal Medicine, Kobe University Graduate School of Medicine, Kobe, Japan.

Background

Serious adverse cardiovascular events including myocardial infarction exhibit pronounced circadian rhythm, with a marked peak in the morning. One of major cause of the heart attack is rupture of atherosclerotic plaques.

Objective

To investigate circadian rhythmicity of molecules involved in plaque rupture and extracellular matrix remodeling in the heart.

Methods

Angiotensin II was treated to the vascular smooth muscle cells (VSMCs) to stimulate the circadian oscillation of clock and clock-controlled genes in VSMCs. Suppressive subtractive hybridization method was used to obtain differentially expressed gene in circadian manner. Finally, northern blot were performed to confirm the circadian expression in mouse aorta and heart.

Results

We observed circadian oscillation of gene expression of MMP-9 and LDL Receptor Related Protein-1 (LRP-1), a modulator of MMP-9 expression, in Angiotensin II treated VSMC. The circadian rhythms were confirmed in the mouse aorta. The aortic LRP-1 expression reached peak at circadian time (CT)-8 four hour after that of MMP-9 when mice put on light. While in the heart MMP-2, instead of MMP-9, and LRP-1 mRNA also revealed a circadian rhythm, the peak of MMP-2 and LRP-1 observed 4 hours later than those in aorta. Further researches are warranted to explore the existence of reactive and anticipative responses among the vascular and the heart.

Conclusion

The similar pattern of circadian oscillation of MMP-9 or MMP-2 and LRP-1 observed in the aorta and the heart. The peak observed in the heart 4 hour later than those observed in the aorta.

Monday, September 19, 2011 (Continued)

16.00 h. – 17.00 h.

Twelfth Scientific Session

Basic Sciences

16.40 **Hemin Therapy Attenuates Inflammatory and Oxidative Insults in the Coronary Arterioles of Zucker Diabetic Fatty Rats:** Joseph F. Ndisang, PhD, FICA, Department of Physiology, University of Saskatchewan, College of Medicine, Saskatoon, Saskatchewan, Canada.

Background

We investigated the effects of the heme oxygenase (HO) inducer, hemin and atrial natriuretic peptide (ANP) in the coronary arterioles of Zucker diabetic fatty rats (ZDF), a model of insulin-resistant type-2 diabetes characterized by elevated oxidative stress, inflammation and cardiopathy.

Methods

Quantitative real-time RT-PCR, Western blot, spectrophotometry, enzyme-immunoassay, histology/morphology assays and immunohistochemical staining were used to characterize the effects of hemin on coronary arterioles of ZDF.

Results

Hemin normalized blood glycemia and abated fibrosis and hypertrophy in the coronary arterioles of ZDF rats. The cardio-protective effects were accompanied by increased HO-1, HO activity, ANP and urinary cGMP, a marker of ANP activity, whereas the levels of ET-1 in the plasma and coronary arterioles were significantly depleted. Furthermore, hemin abated markers/mediators of oxidative stress including 8-isoprostane, nuclear factor kappaB (NF- κ B) and activating-protein (AP-1), while anti-oxidants like bilirubin, ferritin, superoxide dismutase, catalase and the total-anti-oxidant capacity were increased. Correspondingly, hemin reduced remodeling of the coronary arterioles by suppressing extracellular matrix proteins like transforming growth factor beta (TGF- β 1), fibronectin and collagen-I. In contrast, the HO inhibitor, CrMP, nullified the effects of hemin and aggravated oxidative stress, fibrosis and hypertrophy.

Conclusion

By abating oxidative/inflammatory insults and attenuating remodelling, fibrosis and hypertrophy, hemin may preserve the functional integrity of coronary arterioles.

Tuesday, September 20, 2011

08.30 h. – 10.30 h.

Thirteenth Scientific Session

French Paradox Revisited

A Special Symposium

This special symposium discusses the recent developments of the benefits of wine which contains resveratrol. The emphasis is on the cardioprotection, modulation of stem cells in cardiac regeneration, atherosclerosis, aging process, and metabolic syndrome by resveratrol. A summary of chemico-biological overview of resveratrol and its analogues will be provided.

08.30 **Resveratrol-Modified Stem Cell in Cardiac Regeneration: Role of Micro RNA 20b:** Dipak K. Das, PhD, ScD, MD(hon), FAHA, , Narasimman Gurusamy and Partha Mukhopadhyay, University of Connecticut School of Medicine, Farmington, Connecticut, USA; Harvard University Medical Center, Boston, Massachusetts, USA; National Institute of Health (NIH) USA.

To study the efficiency of maintaining the reduced tissue environment via pre-treatment with natural antioxidant resveratrol in stem cell therapy, we pre-treated male Sprague-Dawley rats with resveratrol (2.5 mg/kg/day gavaged for 2 weeks). After occlusion of the left anterior descending coronary artery (LAD), adult cardiac stem cells stably expressing EGFP were injected into the border zone of the myocardium. One week after the LAD occlusion, the cardiac reduced environment was confirmed in resveratrol-treated rat hearts by the enhanced expression of nuclear factor-E2-related factor-2 (Nrf2) and redox effector factor-1 (Ref-1). In concert, cardiac functional parameters (left ventricular ejection fraction and fractional shortening) were significantly improved. The improvement of cardiac function was accompanied by the enhanced stem cell survival and proliferation as demonstrated by the expression of cell proliferation marker Ki67 and differentiation of stem cells towards the regeneration of the myocardium as demonstrated by the expression of EGFP 28 days after LAD occlusion in the resveratrol-treated hearts. Our results demonstrate that resveratrol maintained a reduced tissue environment by overexpressing Nrf2 and Ref-1 in rats resulting in an enhancement of the cardiac regeneration of the adult cardiac stem cells as demonstrated by increased cell survival and differentiation leading to cardiac function. The results further suggested a role of micro RNA 20b in the resveratrol mediated stem cell survival.

Tuesday, September 20, 2011 (Continued)

08.30 h. – 10.30 h.

Thirteenth Scientific Session

French Paradox Revisited

A Special Symposium

08.45 **Resveratrol and Atherosclerosis:** Kailash Prasad, MBBS (Hons), MD, PhD, FRCPC, FACC, FICA, FIACS, Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Objectives

The objectives of this presentation are to provide evidence in support of the role of resveratrol in suppression, regression and slowing of progression of atherosclerosis.

Results

The effect of resveratrol on the suggested risk factors of atherosclerosis and on the suppression, regression, and slowing of progression of atherosclerosis have been evaluated. Resveratrol reduces serum total cholesterol, LDL-C and triglycerides, and raises HDL-C. It lowers serum C-reactive protein and homocysteine. It affects advanced glycation end products and their receptors, and has anti-inflammatory and antioxidant activity. It not only reduces the risk factors, but also reduces the expression of cell adhesion molecules, monocyte chemoattractant protein-1 (MCP-1), monocyte colony stimulating factor (MCSF) and smooth muscle cell proliferation, which are involved in foam cell formation and atherosclerosis. Resveratrol suppresses atherosclerosis in various animal models. The studies on regression and slowing of progression of atherosclerosis are meager. Epidemiological data for suppression of atherosclerosis are numerous. Robust clinical trials for suppression, regression and slowing of progression of atherosclerosis are needed to establish its efficacy in coronary artery and peripheral vascular diseases.

Conclusion

In conclusion, resveratrol reduces the risk factors of atherosclerosis, expression of adhesion molecules, MCP-1, MCSF and smooth muscle cell proliferation, which are involved in the development of atherosclerosis. It suppresses atherosclerosis but its effects on regression and slowing of progression of atherosclerosis are lacking.

Tuesday, September 20, 2011 (Continued)

08.30 h. – 10.30 h.

Thirteenth Scientific Session

French Paradox Revisited

A Special Symposium

09.00 **A Novel Antiaging Strategy with Longevinex for Lifestyle-related Disease and Metabolic Syndrome:** Hajime Ohtani, MD,¹ Keisuke Fujitaka, MD,¹ Toshiji Iwasaka, MD,¹ Dipak K. Das, PhD²; ¹Second Department of Internal Medicine, Kansai Medical University, Moriguchi City, Japan; Department of Surgery, ²University of Connecticut School of Medicine, Farmington, CT, USA.

Background

Metabolic syndrome (MetS) is associated with a clustering of metabolic and cardiovascular risk factors due to accumulation of the visceral fat. Resveratrol is a sort of polyphenol that has been demonstrated to prevent atherosclerosis and stimulate antiaging-related genes in animals.

Objectives

To investigate the effect of add-on Longevinex, which is a modified resveratrol, in patients with lifestyle-related disease and MetS.

Methods

One hundred five patients who had diagnosed as MetS and received conventional therapy for diabetes mellitus, dyslipidemia and hypertension were randomly assigned to oral Longevinex group or control group.

Results

There was no difference in clinical characteristics between the groups at baseline except for waist circumference, which was significantly greater in the Longevinex group. Although body mass index and waist circumference did not change at 3-month follow-up in either group, the Longevinex group of patients tended to improve insulin resistance compared to the control group as demonstrated by lower fasting serum insulin level and HOMA-IR at 3-month follow-up. Longevinex administration significantly increased serum HDL-cholesterol without a significant effect on serum triglycerides, and LDL-cholesterol levels. Inflammatory markers such as high-sensitive CRP and IL-6 did not change in either group during 3-month follow-up. Although serum nitrate plus nitrite was not changed by Longevinex treatment, flow-mediated dilatation significantly increased only in the Longevinex group (5.8 ± 3.5 to 9.2 ± 3.9 %, $p < 0.0001$).

Conclusion

These results demonstrate for the first time that Longevinex improves insulin resistance and endothelial function in MetS patients who have already been receiving conventional therapy for diabetes mellitus, dyslipidemia and hypertension. It is, therefore, suggested that Longevinex administration may represent a novel antiaging strategy for patients with lifestyle-related disease and MetS.

Tuesday, September 20, 2011 (Continued)

08.30 h. – 10.30 h.

Thirteenth Scientific Session

French Paradox Revisited

A Special Symposium

09.15 **Polyphenolic Components from Wine as Treatment for the Metabolic Syndrome:** Lindsay Brown, BPharm, PhD, Department of Biological and Physical Sciences, University of Southern Queensland, Toowoomba, Australia.

Background

Red wine contains many potentially bioactive polyphenols including resveratrol, catechins, anthocyanins, flavonoids as well as ellagitannins from oak during maturation.

Objectives

We have examined the effects of polyphenols on cardiovascular, metabolic and liver changes in a rat model of the human metabolic syndrome.

Methods

Male Wistar rats were fed a high carbohydrate, high fat diet containing condensed milk (40%), beef tallow (20%), fructose (17.5%), rat food (15%) and minerals (1%) with fructose (25%) in the drinking water, for 16 weeks; condensed milk, beef tallow and fructose were replaced by corn starch in control rats. Rats received treatment in food with the flavonoid, rutin, or ellagitannins as additions to the diet for 8 weeks starting 8 weeks after the diet was initiated.

Results

The high carbohydrate, high fat diet increased body fat mass, systolic blood pressure, heart weights, abdominal circumference, visceral fat pad deposition, glucose tolerance after oral glucose loading, infiltration of inflammatory cells in left ventricle and liver, cardiac collagen deposition, left ventricular diastolic stiffness, liver collagen deposition and plasma liver enzyme markers. Treatment with either rutin or ellagitannins prevented or attenuated these cardiovascular, metabolic and liver changes. These results are similar to our published studies on the purple carrot anthocyanins, olive leaf extract containing oleuropein and hydroxytyrosol, and piperine from black peppers.

Conclusion

These results strongly suggest that polyphenols can reverse the chronic low-grade inflammatory state that induces the cardiovascular, metabolic and liver signs in this rat model of diet-induced metabolic syndrome.

Tuesday, September 20, 2011 (Continued)

08.30 h. – 10.30 h.

Thirteenth Scientific Session

French Paradox Revisited

A Special Symposium

09.30 **Chronic Resveratrol Treatment Protects the Cardiovascular System against Diabetes-Induced Damage while its Direct Effect is Detrimental:** Belma Turan, PhD, Department of Biophysics, Ankara University Faculty of Medicine, Ankara, Turkey.

Background

Resveratrol, a natural phytoalexin found in wine, has been suggested to have benefits in human health.

Objectives

However, the direct effects of resveratrol on the activity of cardiovascular system seem to be controversial although it is attracting increased attention due to its diverse health benefits especially in case of cardiovascular disease including diabetes. Resveratrol possesses potent antioxidant properties and has been shown to decrease low-density lipoprotein-cholesterol oxidation and platelet aggregation.

Methods

We examined whether resveratrol has a direct protective effect on cardiovascular system in diabetic rats. Resveratrol (2 mg/kg body wt/day) or sodium selenate (0.3 mg/kg body wt/day) were administered orally for 4 weeks to streptozotocin (50 mg/kg)-induced diabetic rats.

Results

Both sodium selenate and resveratrol demonstrated small but significant reduction (~ 10-15%) in glucose level without no effect in low insulin level in diabetic rats. Either resveratrol- or sodium selenate-treated diabetic rats demonstrated markedly improved left ventricular function compared to the non-treated diabetics. Electrically stimulated isometric contraction and intracellular action potential in isolated papillary muscle strips and transient ($I_{(to)}$) and steady state ($I_{(ss)}$) outward K^{+} currents in isolated cardiomyocytes from STZ-diabetic rats treated with either resveratrol or sodium selenate were found to be similar to those of the normal rats. Furthermore, treatment with both chemicals prevented the diabetes-induced increase in platelet aggregation and thromboxane B2 level in STZ-diabetic rats. In addition, we demonstrated that either resveratrol or sodium selenate treatment improved significantly impaired isoproterenol-induced relaxation responses and contraction responses of the aortic strips, and exhibited marked protection against diabetes-induced degenerative changes in the smooth muscle cell morphology. Biochemical data showed that sodium selenate or resveratrol treatment induced a significant regulation of MMP-2 activity and protein loss as well as normalization of increased levels of tissue nitrite and protein thiol oxidation in both heart and thoracic aorta. In addition, these treatments restored diabetes-induced increased levels of endothelin-1, PKC, and cAMP production in the aortic tissue. Thus our data shows a novel mechanism of pharmacological preconditioning with resveratrol in the diabetic myocardium. On the other hand, the resting force of the isolated right atrium and the peak developed force of the left papillary muscle were depressed by resveratrol exposure (0.1 nM - 0.1 mM). Exposure to the K^{+} (ATP) channel blocker glyburide (3 μ M) prevented significantly the resveratrol-induced decrease. Resveratrol (0.1 mM) shortened the repolarization phase of action potential recorded from the left atrium and this effect of resveratrol was reversed by glyburide (3 μ M). These results indicated that resveratrol depressed cardiac muscle contraction and shortened action potential duration probably due to the activation of K^{+} (ATP) channels in the rat heart.

Conclusion

Resveratrol, similar to an antioxidant, possesses a range of cardioprotective and vasoprotective properties having the capacity to interact with multiple molecular targets, which involve diverse intracellular pathways.

Tuesday, September 20, 2011 (Continued)

08.30 h. – 10.30 h.

Thirteenth Scientific Session

French Paradox Revisited

A Special Symposium

09.45 **French Paradox Revisited—A Chemico-Biological Overview of Resveratrol and its Analogues:** Hannah R. Vasanthi, PhD¹, Dipak K. Das, PhD²; ¹Department of Biotechnology, School of Life Sciences, Pondicherry University, Pondicherry, India; ²Cardiovascular Research Centre, School of Medicine, University of Connecticut, Farmington, USA.

ABSTRACT

Many studies have reported promising health benefits from red wine consumption. Evidence from different experimental studies have suggested that these beneficial effects are due to polyphenols found in red wine, especially resveratrol in grape seeds and skin. Resveratrol (3, 4', 5-trihydroxy-trans-stilbene) identified as one of the key ingredient of red wine, would cause the so – called "French Paradox". This concept was shoot out from the observation that the French population has a relatively high fat diet accompanied by a steady, albeit moderate intake of alcohol in the form of red wine containing high levels of polyphenolic compounds , whilst their incidence of coronary heart disease is lower than expected. The structure of phenolic compounds is a key determinant of their radical scavenging and metal chelating activity which is of importance in most of the disease conditions, and this is referred to as structure–activity relationships (SAR). Numerous studies on resveratrol and its analogues have provoked in understanding the "French paradox" and have stimulated new research interest to investigate its protective effects beyond the cardiovascular system owing to its structure function relationship. Apart from being a potent cardioprotective agent, a large number of reports have been reported about resveratrol and its bioactivities such as cancer chemoprevention, anti – inflammatory, antiplatelet aggregation, anti – oxidative and anti – bacterial activities. These studies demonstrate an urgent need to extend research beyond the "French Paradox" towards better understanding of molecular mechanisms of action of polyphenolic compounds due to their chemico-biologic interactions and their application to human health. The moderate wine consumption can be characterized as a pharmacologic intervention or a dietary intercession may be a matter of opinion. But it would rather be liked to believe that the growing scientific interest in wine and better health is a part of adopting a healthy lifestyle that connects our society with nature, to sustain and enhance human life.

Tuesday, September 20, 2011 (Continued)

10.45 h. – 11.30 h.

Fourteenth Scientific Session

Cardiac Arrhythmias and Stroke/Cardiac Function

This session deals with the effects of atrial fibrillation induced stroke and cardiac dysfunction.

10.45 Echocardiographic Study Demonstrating Significant Differences in Ejection Fraction Measured in Patients During Sinus Rhythm and Atrial Fibrillation/Atrial Flutter—A Poster Presentation: Tahir Tak, MD, PhD, FICA, Kalyan Ghanta, MD, Camilla Jaekel, RN, Charles Cagin, DO; Mayo Clinic Health System, La Cross, Wisconsin, USA.

Background

Ejection Fraction is determined routinely in clinical practice. This study was done to assess whether EF determined in patients with Atrial Fibrillation and Atrial Flutter was comparable to that obtained during sinus rhythm, utilizing echocardiographic measurements.

Objectives

At the conclusion of this presentation, the participants should be able to appreciate that there is a significant discrepancy between Ejection Fraction (EF) measured during Sinus Rhythm (SR) as opposed to that measured during Atrial Fibrillation/Atrial Flutter.

Methods

Twenty six patients with documented Atrial Fibrillation/Atrial Flutter were studied by transthoracic and transesophageal echocardiography. Simpson's biplane method and visual estimation of EF were performed. Five cardiac cycles were averaged to obtain mean values. An EF >0.50 was considered normal and a P-value <0.05 was considered statistically significant.

Results

The mean age of the patients was 66.9 yrs. (range 49-86 yrs). Seven patients were excluded due to previous pacemaker implantation. In 19 patients, the mean EF in Atrial Fibrillation/Atrial Flutter was 53.21 (SD ± 14.42), versus sinus rhythm (SR) mean EF of 60.60 (SD +/- 10.46); p-values <0.05. The mean heart rate in patients with Atrial Fibrillation/Atrial Flutter was 104 bpm (SD ± 30.61) vs. SR mean heart rate of 72.28 (SD 17.3); P<0.05.

Conclusion

EF derived by echocardiography in patients with Atrial Fibrillation/Atrial Flutter is significantly lower than that during SR. This suggests that EF should be re-evaluated in patients after conversion to SR. Several factors may have a prominent impact on the lower EF found in patients with Atrial Fibrillation/Atrial Flutter; these factors include, but are not limited to, tachymyopathy, loss of atrial kick during atrial arrhythmias or shorter diastolic intervals with rapid heart rates. Prospective studies are needed to corroborate these findings.

Tuesday, September 20, 2011 (Continued)

10.45 h. – 11.30 h.

Fourteenth Scientific Session

Cardiac Arrhythmias and Stroke/Cardiac Function

10.55 Stroke Prevention in Atrial Fibrillation: A Lesson Learned from RE-LY Study:

Harmani Kalim, MD, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia.

Atrial fibrillation (AF) is the most common cardiac arrhythmia and a major risk factor for ischemic stroke. Currently the most common anti thrombotic drugs prescribed for prevention for ischemic stroke are aspirin or vitamin K antagonists (VKA). VKA therapy is clearly indicated in patients with moderate or high risk of stroke or patients with a CHADS2 score of 2 or higher. VKA is also recommended in low risk patients whose bleeding risk is lower than ischemic stroke risk. The risk of stroke and death will be increased in patients with atrial fibrillation. And therapy of vitamin K antagonist such as warfarin may reduce the risk of stroke and death, but it can trigger bleeding risk when compared with control treatment. However the use of warfarin is still recommended for patients with atrial fibrillation because they have stroke attack risk.

Vitamin K antagonist is not practical to use because of constraints such as: many interaction with food or other drugs, besides that the use of these drugs require strict laboratory monitoring. This is why vitamin K antagonists is not often used and led to high drop out rates and poor patient's drug compliance. So there were many patients who use warfarin but did not get the adequate anti-coagulant's benefit. Therefore the medical communities today are in need of anti-coagulant drugs which are effective, safe and convenient to use.

Because of the difficulties of VKA therapy for the prevention of ischemic stroke and the large number of patients with AF who need antithrombotic therapy, alternative therapeutic strategies are badly needed. Thus developments are underway with some oral anticoagulant drugs that could be given at a fixed dosage without the need for routine monitoring of the anticoagulant effect. Among the factor Xa inhibitor apixaban, betrixaban, edoxaban and rivoraxaban are the most advanced compound. Currently dabigatran is the furthest developed oral direct IIa inhibitor in comparison to VKA. Dabigatran etexilate is a pro-drug, oral anti-coagulant drug, from the class of direct thrombin inhibitor which potential and effective inhibits changes of pro-thrombin into thrombin. With 6.5% bioavailability, 12-17 hours half-life, 80% of the given dose will be excreted through the kidneys, and does not require routine laboratory monitoring are some of this new drugs' benefits.

In the RE-LY, a multicenter, randomized, double-blind study, has evaluated the use of dabigatran in patients with atrial fibrillation in preventing the occurrence of stroke compared with warfarin dose of 1 mg, 3 mg, 5 mg as the "gold standard". This study engaged 18,113 patients and conducted for 2 years using Dabigatran dose of 110 mg & 150 mg (twice daily).

The conclusion from this study confirms that Dabigatran 110 mg has equivalent effectiveness with warfarin in preventing stroke in patients with atrial fibrillation with equivalent safety profile and less bleeding, while Dabigatran 150 mg has better effectiveness with equivalent safety profile/bleeding compared with warfarin.

Tuesday, September 20, 2011 (Continued)

10.45 h. – 11.30 h.

Fourteenth Scientific Session

Cardiac Arrhythmias and Stroke/Cardiac Function

11.05 Current Unmet Clinical Needs in Stroke Prevention of Atrial Fibrillation:

Anwar Santoso, MD, PhD, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Atrial Fibrillation (AF) is the most common cardiac arrhythmia, affecting an estimated of 6 million individuals in the USA. Since AF mainly affects elderly people, its prevalence is expected to increase in parallel with the increasing age of the population, with a predicted 15.9 million cases by the year of 2050. The lifetime risk for development of AF is one in four in men and women 40 years of age and older. Stroke, the most serious complication of AF, occurs in 5% of the non-anticoagulated patients every year. The risk of stroke increases substantially with age, from 1.5% in individual's age 50-59 years to 23.5% for those aged 80-89 years. Particularly, it is associated with 5-fold risk of stroke. Stroke is the third most frequent cause of death in the USA and the leading cause of serious disability. Therefore, stroke prophylaxis is a vital component of management of AF.

Over the last several decades, a formidable evidence base has been developed for the use of anticoagulant therapy, mostly warfarin. In patients with AF, warfarin prevents 64% risk of stroke. Thus warfarin has become the recommended anticoagulant therapy for AF with at least one additional risk factors for stroke. Despite clear and consistent recommendations, warfarin prescribed to only two thirds of appropriate candidates. Several factors contribute to suboptimal use of warfarin therapy: drug and dietary interactions, inconvenience of INR monitoring, narrow therapeutic window, risk of hemorrhage, and concern about real-world effectiveness, which average 35%. Thus, new oral anticoagulants are needed.

There are many targets for novel oral anticoagulant in the coagulation pathway. Drugs targeting the tissue factor/factor VIIa complex, such as tissue factor pathway inhibitor, prevent the initiation of coagulation. The propagation of coagulation can be inhibited by drugs that block factors IXa or Xa. Fondaparinux and idraparinux inhibit factor Xa indirectly. There are several orally active, direct factor Xa inhibitor such as: apixaban, betrixaban, rivaroxaban.

In the final step of the pathway, thrombin converts fibrinogen to fibrin. Oral direct thrombin inhibitor, include ximelagatran (now withdrawn) and dabigatran. The result of a large, multicenter, randomized trial comparing dabigatran with warfarin was reported recently. Dabigatran is a promising new oral anticoagulant for stroke prevention in AF.

Tuesday, September 20, 2011 (Continued)

11.30 h. - 12.30 h.

Fifteenth Scientific Session

Venous Thromboembolism

This session discusses the risk of thromboembolism in hospital, and recent advances in its treatment.

11.30 A Cohort Study to Analysis the Risk of Venous Thromboembolism in Patients Admitted to the General Medicine Department, Tan Tock Seng Hospital, Singapore: Ashish Anil Sule, MD, FICA, Tay Jam Chin, FRCP, FAMS, Letchumi Sinnathamby, Hwei Khien Lee, Arun Earnest, MSc, PhD, Shaji Jose Vadassery, MD, Department of General Medicine II, Clinical Research Unit, Tan Tock Seng Hospital, Singapore.

Background

Deep vein thrombosis (DVT) and pulmonary embolism (PE) are responsible for significant morbidity and mortality in hospitalized patients. In Caucasian populations, the incidence of DVT and PE is well documented and significant. In contrast, DVT and PE are regarded as rare in Asia. Prophylactic heparin for surgery was therefore not routine. More recent reports, however, indicate an increase in thromboembolic disease in Asians. Our aim was to assess mortality due to venous thromboembolism (VTE) in hospitalized medical patients.

Aim

To assess the risk of venous thromboembolism (VTE) in patients admitted to General Medicine department (Level 5), Tan Tock Seng Hospital (TTSH) in the month of October and November 2009.

Methodology

The primary outcome assessed was mortality due to venous thromboembolism, development of deep vein thrombosis (DVT) or pulmonary embolism within 3 months from the day of admission. Both univariate and multivariate analysis was done for all cause mortality and deaths associated with pulmonary embolism.

Results

Seven hundred twenty-one patients admitted under General Medicine in level 5, TTSH during 2 months were analyzed. There were 368 (51.04%) female patients and 353 (48.96%) male patients with Chinese 566 (78.72%), Malay 100 (13.91%), Indians 46 (6.4%). 492 (68.24%) were independent with activities of daily living (ADL) and 229 (31.76%) were dependent for all ADL. There were in all 42 deaths. There were definite PE deaths in 2 patients (4.76%), probable PE deaths in 3 patients (7.14%) and suspected PE deaths in 8 patients (19.05%). Deaths due to pneumonia were 20 (47.62%), urinary tract infections were 3 (7.14%), other infections were 4 (9.52%). Deaths due to myocardial infarction were 2 (4.76%).

Conclusion

The risk of VTE is high in acutely ill patients admitted to General Medicine department, TTSH, Singapore. The factors which predispose them to a very high risk are ADL dependent, acute heart failure, past history of VTE or if they are clinically dehydrated and have acute renal failure. This warrants increased awareness and need for VTE prophylaxis.

Tuesday, September 20, 2011 (Continued)

11.30 h. - 12.30 h.

Fifteenth Scientific Session

Venous Thromboembolism

11.40 **Pulmonary Embolism with Pre-existing Heart Failure:** Hananto Andriantoro, MD, FICA¹, RWM Kaligis, MD, FICA¹, Iwan Dakota, MD, FICA¹, Ismoyo Sunu, MD¹, Suko Adiarto, MD¹, Taofan, MD¹, Benny Togatorop, MD², Elen, MD², Ganesja M. Harimurti, MD³; ¹Consultants, Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ²Department of Cardiology and Vascular Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ³Head, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia.

Background

Pulmonary embolism (PE) is a relatively common cardiovascular emergency. By occluding the pulmonary arterial bed it may lead to acute life-threatening but potentially reversible right ventricular failure. PE is a difficult diagnosis that may be missed because of non-specific presentation. In patients with pre-existing heart failure or pulmonary disease, worsening dyspnoea may be the only symptom indicative of PE.

Case report

A 45 year old male with clear dyspnoea on effort, orthopnea and paroxysmal nocturnal dyspnoea in the last 2 months and worsened 2 weeks prior to admission at NCCHK. He is known to have pulmonary tuberculosis and has been treated for 5 months. Physical findings showed signs of heart failure, while chest X-ray revealed congestion and laboratory finding showed very high NT pro BNP that support the working diagnosis of Chronic Heart Failure. Despite optimal medical therapy of heart failure and clear lung on auscultation, the patient remain symptomatic therefore, an alternative diagnosis was sought. We subsequently noticed that the patient is classified as high risk of venous thromboembolic event since he has heart failure, immobilized and ankle edema is uni lateral. This suspicion was confirmed with high D-dimer, partial thrombus on popliteal vein by duplex sonography and finally by filling defect in lung perfusion scanning suggestive as pulmonary embolism. After appropriate treatment of PE with unfractionated heparin for five days and maintenance with warfarin, patient did well and discharge.

Conclusion

Patient heart failure is high risk for venous thromboembolism and sometimes both could co-exist. Thus in immobilized patient with heart failure should be re-stratified for risk of venous thromboembolism, and the alternative diagnosis of PE should be considered when heart failure patient remain symptomatic despite optimal medical therapy.

Tuesday, September 20, 2011 (Continued)

11.30 h. - 12.30 h.

Fifteenth Scientific Session

Venous Thromboembolism

11.50 Adjunctive Role of Lumbrokinase in Flight Induced Venous Thromboembolism: Manoefris Kasim, MD, FIHA, FACC, Alexander Edo Tondas, MD, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center, Harapan Kita, Jakarta, Indonesia.

Background

Lumbrokinase is the term given to the group of enzymes extracted from the earthworm (*Lumbricus rebellus*) which possesses plasminogen-activating and direct fibrinolytic properties. Current recommendation for the treatment of non high risk acute pulmonary embolism by ESC (2008) is LMWH/fondaparinux and fibrinolytic is reserved only for high risk patients and a few selected intermediate risk patients after judging bleeding risk. However, with the emerging availability of lumbrokinase as an oral lytic agent, new possibilities might be anticipated in such patients.

Methods

We reported a 59 year old man who came to the National Cardiovascular Center Harapan Kita outpatient clinic after a trip to China with complaint of sudden shortness of breath. He also realized swelling in his right leg, without apparent bluish discoloration or pain. We found out that five days before, he air travelled 5,198 km from Jakarta to Beijing for about 7.5 hours in an economy class seat. Pulmonary contrast CT angiography showed a massive pulmonary embolism in the central right and left pulmonary arteries, extending to some lobar branches. Femoral CT venography also demonstrated bilateral deep vein thrombosis.

Result

The patient was approached as a non-high risk pulmonary embolism patient, and given five days dose of 2.5 mg subcutaneous fondaparinux during hospital stay and initiation of aspirin 100mg. Three capsules of Tromboles® (The Institute of Biophysics, Chinese Academy of Sciences, Beijing), each containing 250mg lumbokinase extract, were administered three times daily and maintained after the patient was discharged two weeks later. The patient responded well and symptoms of dyspnea and leg swelling began to cease on the second day of hospitalization without bleeding complications. Repeat CT scan showed better recanalization of pulmonary arteries and femoral veins.

Conclusion

In this subset of patients, this report is one of the first anecdotal reports addressing the possible role of lumbrokinase as an adjuvant therapy for venous thromboembolism. Lumbrokinase may also have a potential role in VTE prophylaxis, in which further research is needed.

Tuesday, September 20, 2011 (Continued)

11.30 h. - 12.30 h.

Fifteenth Scientific Session

Venous Thromboembolism

12.00 **Cholesterol Emboli Syndrome—A Case Report:** C. Chandrasekhar, MBBS, Apollo Hospitals, Hyderabad, India.

Background

Cholesterol embolism should be suspected in a patient who develops worsening renal function, and distal ischemia after an invasive procedure.

Objectives

To find out the severity of cholesterol emboli syndrome after an invasive procedure and to treat it appropriately with medications.

Methods

We present the case of a 55-year old male patient who developed cholesterol embolism one week after coronary angiogram. The possible source of emboli was a large ulcerated plaque from atheromatous aorta resulting in occlusion of small arteries distally. After the procedure, the patient developed severe, painful, necrotic skin lesions on his toes and suffered end-stage renal disease.

Results

Timely decision and avoiding usage of medications and anti-coagulants resulted in a decrease in severity of this syndrome in our case.

Conclusion

Treatment of an acute episode of cholesterol emboli syndrome is generally symptomatic.

Tuesday, September 20, 2011 (Continued)

12.30 h. – 13.30 h.

Sixteenth Scientific Session

Professor John B. Chang Research Achievement Award
The Need for Reoperation after Failed Transaxillary Decompression
in Paget-Schroetter Syndrome
A Special Luncheon Lecture

The Professor John B. Chang Research Achievement Award is presented annually to a Fellow of the International College of Angiology in recognition of excellence in research and scholarly activity in the field of cardiovascular disciplines.

Introduction By:

Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FACC, FICA, FIACS

Professor Emeritus of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Presentation By:

Professor J. Ernesto Molina, MD, PhD, FICA

Professor of Surgery; Co-Chairperson, Scientific Committee, International College of Angiology; Editor, *International Journal of Angiology*, Official Journal of the International College of Angiology; Division of Cardiovascular and Thoracic Surgery, Department of Surgery, University of Minnesota, Minneapolis, Minnesota, USA.

Background

Failure of adequately decompress the venous thoracic inlet using the transaxillary 1st rib resection (TARR) in patients with subclavian vein thrombosis often leads to rethrombosis.

Objectives

To show that reoperating these patients with proper anterior decompression and direct vein enlargement cure can be achieved.

Methods

A series of 15 patients treated for Paget-Schroetter syndrome using the TARR were seen with recurrent thrombosis. All of them were subjected to multiple balloon plasties. Four had up to 3 stents implanted which also failed. Reevaluation was done with venography. Ten were reoperated using our standard anterior subclavicular approach. Time of reoperation ranged from 5 mo. to 7 years (mean 23.4 mo). Five were inoperable due to total obliteration into the arm veins as early as 2 weeks after TARR.

Results

All 10 patients had successful reestablishment of the vein patency, flow and caliber, and have remained patent without anticoagulation for up to 5 years.

Conclusions

TARR is not recommended for treatment of patients with Paget-Schroetter syndrome. Also if they rethrombose or remain obstructed, they should be reoperated promptly instead of resorting to implanting stents, multiple balloon plasties that invariable fail, nor should they be kept on anticoagulation indefinitely hoping to maintain the vein open.

Tuesday, September 20, 2011 (Continued)

13.30 h. – 14.00 h.

Seventeenth Scientific Session

Professor John B. Chang Oration Lecture
Bovine Aortic Arch—A Marker for Thoracic Aortic Disease
A Special Lecture

This special oration lecture emphasizes the fact there is an association between the bovine aortic arch and thoracic aortic disease.

Introduction By:

Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FCC, FICA, FIACS

Professor Emeritus of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Presentation By:

John A. Elefteriades, MD, FICA

William W.L. Glenn Professor of Cardiothoracic Surgery; Vice Chairman and Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology*; Member, International Steering Committee, ICA Research and Education Foundation; Chief, Section of Cardiothoracic Surgery, Yale University School of Medicine, New Haven, Connecticut, USA.

Background

BA is a congenital anatomic variant in which the left common carotid and innominate arteries share a common origin. Though BA is regarded as a normal variant, very few direct data are available, and suspicion exists that BA may predispose to thoracic aortic disease.

Objectives

To determine whether bovine aortic arch (BA) is associated with thoracic aortic disease.

Methods

We retrospectively reviewed CT and/or MRI scans of 616 patients with thoracic aortic disease and 844 control patients to determine prevalence of BA. In patients with thoracic aortic disease, we assessed accuracy of official radiology reports in citing BA, and reviewed hospital records to determine clinical course and outcome (dissection, rupture, growth rate).

Results

Twenty-six percent of patients with thoracic aortic disease had concomitant BA, compared to 16.4% of patients without thoracic aortic disease ($P < 0.001$). There was no association between BA and prevalence of dissection or rupture ($P = 0.39$ and $P = 0.77$, respectively). Rate of aortic expansion was 0.29 cm/year in the BA group and 0.09 cm/year in the non-BA group ($P = 0.003$). Radiology reports cited BA in only 16.1% of affected patients.

Conclusion

- 1) BA is significantly more common in patients with thoracic aortic disease than in the general population.
- 2) Aortas expand more rapidly in the setting of BA.
- 3) Radiology reports often overlook BA.
- 4) These observations argue strongly that BA should not be considered a normal variant of arch anatomy.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

This session focuses on the recent development in pathogenesis and diagnosis of aortic aneurysms. Particular emphasis is on the treatment of aortic aneurysms, such as endovascular repair, Bentall operation, and various stent grafts.

14.00 **Abdominal Aortic Aneurysm with Intracardiac Thrombus: A Rare Finding in a Cadaver at Alfaisal University:** Motaz M. Alyafi, Bernhard Henricus Jozef Juurlink, PhD, Professor of Anatomy and Cell Biology, Paul Ganguly MBBS, MD, Professor of Anatomy; College of Medicine, Alfaisal University, Riyadh, Kingdom of Saudi Arabia.

Background

Coexistence of Abdominal Aortic Aneurysm (AAA) with intracardiac thrombus is infrequent and develops in rare situations. The presence of both AAA and intracardiac thrombus can be attributed to various etiologies such as: autoimmune and genetics. However, this creates a critical clinical problem because the overall picture is broader and hence needs special management such as extensive catheterization.

Objectives

In this paper, we present a case of AAA with intracardiac thrombus in a cadaver on routine dissection, and discuss possible explanations for such finding. Also, we outline how such finding can support the significance of the cadaver-based teaching of anatomy of the medical students.

Methods

Initially, the abdomen was dissected and exposed to study the abdominal structures in an anatomy class, and later the thoracic region was dissected as well and all the clinical abnormalities were examined and documented. Autopsy of the clot was obtained for histopathology analysis.

Results

The intracardiac thrombus was present in the right atrium characterized by projection into the superior vena cava, inferior vena cava and the right ventricle. The AAA was extensive and inferior to the renal arteries constricting the entire inferior vena cava. Moreover, associated findings included presence of numerous collaterals in the thoracic region near the superior vena cava; histological examination of the clot showed extensive population of leukocytes. There were enlarged mediastinal lymph nodes.

Conclusion

AAA with intracardiac thrombus can develop in rare occasions and there could be due to different possible causes such as autoimmune and genetic, or each can develop based on distinct pathology. Cadaver exhibits an excellent model for integrating anatomy and physiology together and triggering the medical students to think "outside the box" which certainly will help them in their future medical career.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

14.10 Thoracic Aortic Aneurysm with Dissection DeBakey Type III—Hybrid Management and Its Complications: A Case Report: Iwan Dakota, MD, FICA¹, Maizul Anwar, MD², Rony M. Santoso, MD³, Ismir Fahri, MD³, RWM Kaligis, MD, FICA¹, Ismoyo Sunu, MD, FICA¹, Hananto Andriantoro, MD, FICA¹, Suko Adiarto, MD¹, Taofan, MD¹, Ganesja M. Harimurti, MD⁴; ¹Consultants, Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ²Department of Cardiothoracic Surgery, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ³Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ⁴Head, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia.

Background

Endovascular stent graft has now emerged as an alternative strategy in the management of aortic aneurysm and dissection. Several conditions required both surgical and endovascular approach (hybrid). We reported a case of thoracic aortic aneurysm with dissection, DeBakey type III, who underwent aortic de-branching followed by TEVAR.

Case Report

A 72-year old male was referred to NCCHK emergency unit after three weeks hospitalization at Hasan Sadikin General Hospital. The patient had symptoms of heart failure, without any chest pain, and history of hypertension, and was an ex-smoker. An aortic MSCT was performed which revealed an aortic aneurysm from the aortic valve to one third of the distal descending aorta with dissection De Bakey type III. Surgical approach of the descending aorta was considered to be a very high risk procedure, so we decided to perform staging management with ascending aorta de-branching followed by aortic stent graft (TEVAR). The aortic de-branching with Vascutex was performed, but the surgeon left the origin of left subclavian artery open. Three separated aortic stent grafts were deployed from proximal to distal aorta that close the primary entry tear of dissection with satisfactory result. Dual anti-platelets were administered to ensure graft patency, but there was an active flow to the aneurysm complication from the unclosed origin of left subclavian artery which is clearly shown by CT angiography. A vascular plug combined with coils were successfully implanted to the origin of left subclavian artery and the patient was discharged in good condition.

Conclusion

Aortic aneurysm involving ascending arch and descending aorta with dissection DeBakey type III is one of most difficult cases in which require a hybrid approach. Complete de-branching should be ensured before placement of aortic stent graft.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

14.20 **Saccular Type Juxtarenal Abdominal Aortic Aneurysm Managed with a Customized Aortic Stent: A Case Report:** RWM Kaligis, MD, FICA, Elen, MD, Sefri Noventi, MD, Iwan Dakota, MD, FICA, Ismoyo Sunu, MD, FICA, Hananto Andriantoro, MD, FICA, Suko Adiarto, MD, Taofan, MD, Ganesja M. Harimurti, MD¹, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ¹Head, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia.

Background

Endovascular aortic repair (EVAR) has been proven to be the first choice in treating patients with AAA. However, in cases where AAA are involved, or are too close to the renal arteries, open surgical repair or branched stent graft is the preferred choice of intervention. We reported a patient with PAU type of juxtarenal AAA who underwent successful EVAR with a customized aortic stent.

Case Report

A 67-year old hypertensive and diabetic male, came to NCCHK complaining of back pain. Abdominal MSCT revealed a penetrating atherosclerotic ulcer AAA with saccular type (\pm 4-5 cm) located at posteroinferior part of the renal arteries. Conventionally, surgical approach will be advised. However, the patient refused surgery. A customized 22 x 80 mm aortic stent was designed for this case with the covered stent located only at the posterior part of the stent. This endovascular stent graft was implanted successfully, with patent superior mesenteric artery and bilateral renal arteries.

Several hours after the procedure, the patient had leg pain with non-palpable anterior and posterior tibial arteries that were confirmed with Duplex sonography. Arteriography of the right lower limb artery showed thrombus at right femoral artery and total occlusion at the distal part of the popliteal artery. Thrombo-suction with an Angiojet catheter was performed successfully and normal arterial flow was restored.

Conclusion

Endovascular aortic repair with customized stent provided alternative management for juxtarenal AAA and could be the management of choice in patients who refuse open surgery. Complications related to the procedure must be considered and managed as well.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

14.30 **Tuberculosis—A Very Rare Cause of Mycotic Aortic Aneurysm:** Suko Adiarto, MD, Benny Togatorop, MD, Maizul Anwar, MD¹, Ismoyo Sunu, MD, FICA, RWM Kaligis, MD, FICA, Hananto Andriantoro, MD, FICA, Rita Zahara, MD², Iwan Dakota, MD, FICA, Taofan, MD, Ganesja M. Harimurti, MD³; Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ¹Department of Cardiothoracic Surgery, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ²Surgery Intensive Care Unit, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ³Head, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia.

A 33 year-old male was referred to our hospital for further management of a mediastinal mass. He had been complaining of dry cough for 3 months ago. The patient lost 3kg of weight within 6 months. Chest x-ray showed enlargement of the mediastinal area. We immediately ordered a CT angiography of the aorta and found a huge mycotic aneurysm with the maximal diameter of almost 8cm at the ascending aorta. The patient was then scheduled to undergo surgical aortic repair. The surgeon informed us, the pericardium is so sticky, that it was decided to do a femoro-femoral bypass instead. Aortic repair was then performed with interposition Vascutex no 20. Immediate post-operative period was uneventful; however the surgical wound was difficult to heal despite treatment with culture-based antibiotics. On the 14th post-operative day, the patient suddenly complained of a very severe back pain and was immediately in the irreversible stage of shock. Pathology result performed in another hospital came 3 weeks after surgery, and showed typical features of tuberculosis: infiltration of epithelioid macrophages, Langhans giant cell and large characteristic caseous necrosis.

This is the very first case of aortic tuberculosis under our care from which we learned a very hard lesson that although exceedingly rare in the era of modern antibiotics, tuberculosis can still be the cause of mycotic aneurysms, and patients with aortic tuberculosis can only survive if they had both surgical repair and anti-tuberculosis medical treatment.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

14.40 **Giant Ascending Aortic Aneurysm: A Rare Case:** Taofan Siddiq, MD, Elisa F. Pakpahan, MD, Sefri Noventi, MD, Ismoyo Sunu, MD, FICA, RWM Kaligis, MD, FICA, Hananto Andriantoro, MD, FICA, Iwan Dakota, MD, FICA, Suko Adiarto, MD, Ganesja M. Harimurti, MD¹; Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita, Jakarta, Indonesia; ¹Head, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia.

Background

Ascending aorta aneurysms are commonly seen in patients with cardiovascular risk factors especially hypertension. Aortic diameter is a risk marker of aortic rupture or dissection. Giant ascending aortic aneurysm, defined as an aneurysm more than 10 cm in diameter, is rare. We reported a very rare case of giant aortic aneurysm with maximal diameter more than 16 cm who underwent aortic root surgery. To the best of our knowledge this is the largest aortic aneurysm that has ever been reported.

Case Report

A 45-year old male was admitted to NCCHK, and presented with shortness of breath within in one year and gradually worsened. He also had edema of the face and right arm. He was previously told he had a right lung tumor and advised to undergo surgery, but he refused. The chest x-ray showed a giant mediastinum tumor mass covering all right hemithorax. CT angiography revealed aortic ascending aneurysm with dimension of 135.7 x 146.2 x 164.7 mm with intramural thrombus and compressing the superior cava vein. Aortic root replacement surgery was performed. A giant ascending aortic aneurysm occupying most of the thoracic cavity, with the heart lying posteriorly. The arch was not found to be involved. Unfortunately, pneumonia and atelectasis was so severe that the patient did not recover after surgery. In this case, even the dimension of the aneurysm very big, even though there is no evidence of dissection.

Conclusion

With a diameter of an aneurysm more than 16cm the risk of rupture is very high. On the other hand, aortic repair surgery with significant comorbidities also carries very high mortality rates. Thus, we have to balance between the risk and benefit of surgical intervention in such patients.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

14.50 Early and Mid-Term Usefulness of Endovascular Aneurysm Repair for Abdominal Aortic Aneurysm with the Zenith and Excluder Stent Graft:

Hitoshi Sakuda, MD, Kota Shukuzawa, MD, Koji Maeda, MD, Kenjiro Kaneko, MD, Hiroki Ohta, MD, FICA, Makoto Sumi, MD, FICA, Katsunori Tanaka, MD, Koji Kurosawa, MD, Hiromasa Tachihara, MD, Naoki Toya, MD, FICA, Yuji Kanaoka, MD, FICA, Atsushi Ishida, MD, FICA, Takao Ohki, MD, PhD, FICA, Professor of Surgery; Department of Surgery, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background and Objectives

The purpose of this study was to evaluate the usefulness of abdominal aortic aneurysm endovascular repair (EVAR) using the Zenith (Cook) and the Excluder (W.L. Gore & Associates) stent-graft through 40 months of follow-up.

Methods

A total of 538 patients (76 y.o. at average) who underwent elective EVAR with the Zenith (230 patients) and the Excluder (308 patients) stent-graft at Jikei University Hospital between July 2006 and April 2010 were analyzed retrospectively. Fenestrated or branched EVAR were excluded in this study. In case with hypogastric artery coil embolization, procedures were performed with EVAR simultaneously.

Results

Technical success defined as successful stent-graft placement without type 1 or type 3 endoleaks was 97% in Zenith group and 88% Excluder group ($P < 0.05$). The operation time (minutes), blood loss (ml), and amount of contrasts used (ml) were 159 in Zenith group/167 in Excluder group, 275/340, and 136/157, respectively (N.S.). Early complications including limb occlusion, ischemic colitis, etc. occurred at 5.8% in Zenith group and 0.6% in Excluder group ($P < 0.05$) without mortality. During follow-up period, persistent endoleaks were noted more frequently in Excluder group (7.1%) than Zenith group (1.4%) without aneurysm rupture, open conversion, and aneurysm-related death.

Conclusion

This clinical data is satisfactory, and supports early efficacy and safety, and middle-term durability of EVAR both with the Zenith and the Excluder grafts. Further follow-up study is necessary for long-term usefulness, especially in cases with persistent endoleaks.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

15.00 **Therapeutic Strategies for Visceral Artery Aneurysms:** Soitirou Fukushima, MD, Kota Shuzakawa, MD, Koji Kurosawa, MD, Shigeki Hirayama, MD, Hiromasa Tachihara, MD, Naoki Toya, MD, FICA, Yuji Kanaoka, MD, FICA, Hitoshi Sakuda, MD, Atsushi Ishida, MD, FICA, Takao Ohki, MD, PhD, FICA, Professor of Surgery; Department of Surgery, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background and Objectives

Visceral artery aneurysms (VAAs) are uncommon, but they are clinically important because of the incidence of rupture and distal embolization. Asymptomatic VAAs which are detected by CT and MRI have been increasing because of advancement of the imaging modalities. Although both endovascular treatment (EVT) and open surgery (OS) are applicable to VAAs, the appropriate treatment should be chosen by vascular surgeons.

Methods

In the past 4 years, 53 patients with visceral aneurysm, including 6 celiac and common hepatic artery aneurysm (CAA and CHAA) cases, 3 superior mesenteric artery aneurysm (SMAA) cases, 17 splenic artery aneurysm (SAA) cases, 23 renal artery aneurysm (RAA) cases, and 2 gastroduodenal artery aneurysm (GDAA) cases, were treated in our institution.

Results

The ages ranged from 30 to 80. Of 6 patients with CAA and CHAA, 2 underwent OS, 4 underwent EVT. All of 3 patients with SMAA underwent OS. All of 17 patients with SAA underwent EVT. Of 23 patients with RAA, OS was performed in 13, EVT in 10. Both patients with GDAA underwent EVT. Urgent intervention were required in both cases with GDAA because of symptomatic pseudoaneurysms.

The choice of treatment depends upon the necessity of preserving the parent vessel and shape of aneurysm, existence of the branches from the aneurysm sac, and patients' condition. Preserving parent vessel is important for treatment of RAA and SMAA, but is not indispensable for treatment of CA, CHAA, and RAA. Therefore, OS tended to be applicable to RAA and SMAA; meanwhile, CAA, CHAA, and SAA were mostly treated by EVT.

Conclusion

Vascular surgeons should be proficient in both treatments in order to select the appropriate procedure for VAAs.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

15.10 Treatment for Aorto-Duodenal Fistula after Abdominal Aortic Aneurysm Repair—The Role of Endovascular Repair as a Bridge to the Radical Operation: Kousuke Tsumura, MD, Kota Shukuzawa, MD, Koji Maeda, MD, Kenjiro Kaneko, MD, Hiroki Ohta, MD, FICA, Makoto Sumi, MD, FICA, Katsunori Tanaka, MD, Koji Kurosawa, MD, Shigeki Hirayama, MD, Hiromasa Tachihara, MD, Naoki Toya, MD, FICA, Yuji Kanaoka, MD, FICA, Hitoshi Sakuda, MD, Atsushi Ishida, MD, FICA, Takao Ohki, MD, PhD, Professor of Surgery, Department of Surgery, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background and Objectives

Endovascular aneurysm repair (EVAR) has gained wide acceptance, but it is not a good indication for infectious sites. We report a case of application of EVAR in a patient with infectious pseudoaneurysm as a bridge to radical repair.

Methods

A 63-year-old man was admitted to our hospital in the state of shock due to gastrointestinal bleeding. He had undergone open repair of an abdominal aortic aneurysm (AAA) at the age of 52. Computed tomography revealed a pseudoaneurysm originating from a prior proximal anastomotic site. Emergent EVAR was first performed to control gastrointestinal bleeding. After improving the general condition, extra-anatomical bypass, extirpation of the infected graft and debridement of the surrounding tissue was performed. His post-operative course was uneventful, and an administration of oral antibiotics was continued after discharge to control infection.

Results

In this case, emergency surgical repair should be necessary because of continuous bleeding from the aorto-duodenal fistula. However, open surgical procedure is quite risky. EVAR is palliative, but secure, less invasive and gives a chance for healing or another therapeutic option.

Conclusion

EVAR for infectious sites is considered to be a contraindication, but it might be applicable to aorto-duodenal fistulas to control bleeding as a bridge to radical procedure.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

15.20 Transcatheter Treatment of Pancreatic Pseudoaneurysms and Massive Duodenal Bleeding: Rajinder P. Sharma, MD, FSIR, FICA, Division of Vascular and Interventional Radiology, Henry Ford Hospital, Detroit, Michigan, USA.

Background

Peri-pancreatic aneurysms and bleeding duodenal ulcers after failed endoscopic therapy have traditionally been treated surgically. However, surgical treatment has a mortality rate of 16-50%.

Objectives

To compare the safety and effectiveness of transcatheter treatment of pancreatic pseudoaneurysms and bleeding duodenal ulcers with surgical treatments.

Methods

During January 2001 to December 2010, 55 patients with pancreatic visceral aneurysms and massive duodenal bleeding after failed endoscopic therapy were treated by transcatheter embolization by interventional radiologists at Henry Ford Hospital. Forty patients had documented pancreatic-duodenal aneurysms or extravasation of contrast. Fifteen patients underwent empirical embolization of the gastro-duodenal artery after no source of bleeding could be demonstrated.

Results

Ninety percent of patients were successfully treated with transcatheter embolization, and 10% of patients expired due to multiple surgeries and infection.

Conclusion

Transcatheter treatment of peripancreatic aneurysms and massive duodenal bleeding is safe, effective, and has reduced mortality when compared to surgery.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

15.30 **Single Center Experience: Treating Thoracic Aortic Dissection with a Separated Stent Graft System:** Iwan Dakota, MD, FICA, Taofan, MD, S. Adiarto, MD, H. Andriantoro, MD, FICA, I. Sunu, MD, FICA, RWM Kaligis, MD, FICA, G.M. Harimurti, MD, Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center Harapan Kita Hospital, Jakarta, Indonesia.

Background

Thoracic aorta dissection is a life threatening condition and should be one of the most common acute illnesses of the aorta. This condition could lead to a catastrophic condition without proper management. Endovascular procedures to treat thoracic aorta dissection which is known as thoracic endovascular aortic repair (TEVAR) has been widely accepted for type B aorta dissection, especially for those with high risk for open surgical procedures. Unfortunately, the current commercially available stent grafts almost always comes with a relatively bigger delivery system, which sometimes leads problems during delivery and deployment of those stent grafts, and is related to relatively smaller caliber of iliac and femoral arteries, particularly in the Asian population. To solve these problems, getting smaller profile delivery systems is one of the solutions in terms of reducing the risk of failure during delivery or deployment of the aortic stent grafts.

Aim

To determine the safety, short- and mid-term outcome of type B aortic dissection/descending thoracic aorta dissection (DTA), which is treated with an endovascular separated aortic stent graft system.

Method

Totally 30 patients with thoracic aortic dissection, consist of 15 patients with acute, and 14 patients with sub-acute type B aorta, and 1 patient with type A sub-acute thoracic aortic dissection underwent treatment with a separated stent graft (*Seal®*, S&G Co, Korea) between the period of August 2004 and December 2010. There were 26 men and 4 women with a median age of 61.6 years (46-73 yrs). The anatomy of the thoracic aorta was reviewed by performing a high resolution contrast CT together with digital subtraction angiography (DSA). The majority of patients had co-morbid illnesses such as hypertension (100%), CAD in 10 pts (33.3%) and DM in 4 pts (13.3%). All patients presented in our center with uncontrolled hypertension. Duration of follow-up period ranged from 6 to 60 months (median 32 mo).

Results

TEVAR done by a transfemoral approach with 12-14 Fr sheath under local anesthesia to the bilateral groin in all cases. The proximal landing zone varied from 1.5 to 3.1 cm. Technical success rate was 90.0% (27 pts). Neither aortic dissection related mortality or immediate conversion to open surgical repair was found in the follow up period. One patient who underwent a thoracic aortic dissection involved of arch dissection underwent a surgical procedure (debranching) followed by TEVAR. Endoleak rate was 13.3% (4pts) at 1 month follow-up period. A secondary intervention was required in 1 patient (3.3%) who required a secondary stent graft implantation.

Conclusions

Thoracic endovascular aortic repair (TEVAR) to treat thoracic aortic dissection by use of a separated aorta stent graft system revealed a safe procedure with a high technical success rate. Peri-operative morbidity and mortality rate is relatively low in short- and mid-term outcome.

Tuesday, September 20, 2011 (Continued)

14.00 h. – 16.00 h.

Eighteenth Scientific Session

Aortic Aneurysms

15.40 **Bentall Operation in High Risk Patients:** Arinto Bono Adji Hardjosworo, MD, Tri Wisea, MD, Maizul Anwar, MD, Tarmizi Hakim, MD, Adult Cardiac Surgery Division, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Background

Bentall operation is considered as one of the standard procedures to treat dilatation of the ascending aorta with or due to aortic valve deformities. However, in developing country like Indonesia, patients often come in a very late condition therefore, the risk of operation for those patients is high. We try to evaluate the outcome of those patient.

Method

We present one case. A 35 y.o. male with Marfans Syndrome, had been admitted several times to the hospital due to shortness of breath and edema of the extremities. The echo revealed severe AR, dilatation of the ascending aorta with a diameter of 7.4 cm. Both ventricular function was markedly impaired with LVEF of 27% and TAPSE of 1.2. LV was very dilated with EDD of 87 mm and ESD of 78 mm. Pulmonary hypertension was severely high. The patient then underwent button Bentall procedure.

Result

ICU ventilator time was prolonged until 4 days. CRRT was used during first 3 days post-op. Hemodynamics could be maintained with epinephrine. Pulmonary hypertension gradually improve with sildenafil and PGI I. Total hospital length of stay was 14 days. Patient was discharged with functional status class 2.

Conclusion

Bentall procedure is still the procedure of choice for patients with dilatation of the ascending aorta due to aortic valve deformities even for high risk patients. Long-term survival for those patients do need to be evaluated.