



56<sup>th</sup> Annual World Congress



International College of Angiology

Jointly Sponsored by

**OhioHealth Continuing Medical Education**

*A Unique Blend of Disciplines Providing a Forum for a State-of-the-Art Program*



**SEPTEMBER 18, 19, 20, 2014**

**Hilton Hotel at Easton Town Center  
Columbus, Ohio**

**PROGRAM CHAIRMAN**

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

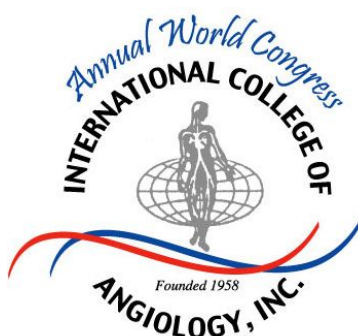
**CHAIRMAN**

**LOCAL ORGANIZING COMMITTEE**

**Randall W. Franz, MD, FACS, RVT, FICA**

**Scientific Program Abstracts**





## **International College of Angiology Scientific Committee**

Responsible for review and selection of all scientific papers pro-offered for the Annual World Congress within budgetary and space limitations, and for the organization of special symposia and workshops.

**Kailash Prasad, M.D., Ph.D., Chairman**  
Saskatoon, Canada

### **Scientific Committee Co-Chairpersons**

**Pertti T. Aarnio, M.D., Ph.D.**  
Pori, Finland

**John D. Corson, M.B., Ch.B.**  
Albuquerque, New Mexico

**John A. Elefteriades, M.D.**  
New Haven, Connecticut

**Glenn R. Faust, M.D.**  
East Meadow, New York

**L. Michael Graver, M.D.**  
New Hyde Park, New York

**Karthikeshwar Kasirajan, M.D.**  
Boardman, Ohio

**Choi-Keung Ng, M.D.**  
Innsbruck, Austria

**Takao Ohki, M.D., Ph.D.**  
Tokyo, Japan

**Edward Ross, M.D.**  
Indianapolis, Indiana

**Sibu P. Saha, M.D., MBA**  
Lexington, Kentucky

**Rajinder P. Sharma, M.D.**  
Detroit, Michigan

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

# 56<sup>th</sup> Annual World Congress ▪ ICA 2014

## International College of Angiology

Hilton Hotel at Easton Town Center  
Columbus, Ohio ▪ September 18-20, 2014

### Board of Directors

John B. Chang, M.D., *Chairman*  
John A. Eleftheriades, MD, *Vice Chairman*  
Pertti T. Aarnio, M.D., Ph.D.  
Elie D. Aboulafia, M.D.  
John D. Corson, M.B., Ch.B.  
Victor A. Ferraris, M.D., Ph.D.  
Ernesto P. Molmenti, M.D., Ph.D., MBA  
Takao Ohki, M.D., Ph.D.  
Otmar M. Pachinger, M.D.  
Kailash Prasad, M.D., Ph.D.  
Edward Ross, M.D.  
Sibu P. Saha, M.D., MBA  
Rajinder P. Sharma, M.D.

### Directors Emeritus

Jose Alemany, M.D.  
Tatsuki Katsumura, M.D., Ph.D.

### Officers, Scientific Council

Otmar M. Pachinger, M.D., *President*  
Rajinder P., Sharma, M.D., *President-Elect*  
Ernesto P. Molmenti, M.D., Ph.D., MBA, *Secretary General*  
Randall W. Franz, M.D., *Treasurer*

### Vice Presidents

Aurel Andercou, M.D.  
Cluj-Napoca, Romania  
Andreaia P. Andreev, M.D.  
Sofia, Bulgaria  
Semih I. Barlas, M.D.  
Istanbul, Turkey  
Glenn R. Faust, M.D.  
East Meadow, New York  
L. Michael Graver, M.D.  
New Hyde Park, New York  
Kathikeshwar Kasirajan, M.D.  
Boardman, Ohio  
Stanley Katz, M.D.  
Manhasset, New York  
Robert M. Mentzer, Jr., M.D.  
Detroit, Michigan  
Choi-Keung Ng, M.D.  
Innsbruck, Austria  
Ramdas P. Pai, M.D.  
Los Angeles, California  
David N. Siegel, M.D.  
New Hyde Park, New York  
Josef Veselka, M.D.  
Prague, Czech Republic  
Thomas F. Wayne, Jr., M.D., Ph.D.  
Lexington, Kentucky  
Wei Zhou, M.D.  
Stanford, California

### Honorary Fellows

Eugene Braunwald, M.D.  
Alain F. Carpentier, M.D.  
Denton A. Cooley, M.D.  
Csaba Dzsiniich, M.D.  
Michael Grimm, M.D.  
Larry H. Hollier, M.D.  
Pekka-T. Harjola, M.D.  
Fritz Kaindl, M.D.  
Francis Robicsek, M.D., Ph.D.  
Wilhelm Sandmann, M.D.  
Frank J. Vieth, M.D.  
Stephen Westaby, BSc., Ph.D., M.S.  
Rosalyn S. Yallow, Ph.D.

### Past-Presidents

Albert Senn, M.D. (1976-1978)  
Fritz Kaindl, M.D. (1979-1981)  
Earl R. Olsen, M.D. (1986-1989)  
Hans J. Hachen, M.D. (1989-1990)  
John B. Chang, M.D. (1991-1995)  
Kailash Prasad, M.D., Ph.D. (1995-1997)  
Tatsuki Katsumura, M.D., Ph.D. (1997-1999)  
Pertti T. Aarnio, M.D., Ph.D. (1999-2001)  
Jose Alemany, M.D. (2001-2003)  
Elie D. Aboulafia, M.D. (2003-2005)  
John A. Eleftheriades, M.D. (2005-2007)  
John D. Corson, M.B., Ch.B. (2007-2009)  
Sibu P. Saha, M.D., MBA (2009-2011)  
Takao Ohki, M.D., Ph.D. (2011-2013)

### Executive Director

Denise M. Rossignol, B.S.

**International College of Angiology  
56<sup>th</sup> Annual World Congress  
Hilton Hotel - Easton Center  
Columbus, Ohio  
September 18, 19, 20, 2014**

**Scientific Program**

**Thursday, September 18, 2014**

**8:00 am – 8:15 am**

**Opening Remarks and Introductions**

**Master of Ceremonies**

**Introduction By:**

**Randall W. Franz, MD, FACS, RVT, FICA**

Associate Professor of Surgery, Ohio University School of Medicine, Columbus, Ohio; Adjunct Assistant Professor of Surgery, Ohio State University School of Medicine, Columbus, Ohio; Chief, Vascular and Endovascular Surgery; Medical Director, Grant Vascular and Vein Center, Columbus, Ohio; Treasurer and Member, Board of Directors, International College of Angiology; Chairman, Local Organizing Committee, 56<sup>th</sup> Annual World Congress, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

**President**

**Univ.-Prof. Dr. Otmar M. Pachinger, MD, FESC, FAHA, FICA**

Professor Emeritus, Distinguished Professor of Cardiology, Medical University of Innsbruck, Innsbruck, Austria; President, Austrian Heart Foundation; President and Member, Board of Directors, International College of Angiology; Senior Editor, *International Journal of Angiology*.

**Program Chairman**

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

Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York, New York; Director, Long Island Vascular Center, Roslyn.

**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; Consulting Editor, *International Journal of Angiology*; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

**Local Organizing Committee Chairman**

**Randall W. Franz, MD, FACS, RVT, FICA**

Associate Professor of Surgery, Ohio University School of Medicine, Columbus, Ohio; Adjunct Assistant Professor of Surgery, Ohio State University School of Medicine, Columbus, Ohio; Chief, Vascular and Endovascular Surgery; Medical Director, Grant Vascular and Vein Center, Columbus, Ohio; Treasurer and Member, Board of Directors, International College of Angiology; Chairman, Local Organizing Committee, 56<sup>th</sup> Annual World Congress, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

**Welcome Address**

**David P. Blom**

President and Chief Executive Officer, OhioHealth, Columbus, Ohio.

**Presidential Address**

**Univ.-Prof. Dr. Otmar M. Pachinger, MD, FESC, FAHA, FICA**

Professor Emeritus, Distinguished Professor of Cardiology, Medical University of Innsbruck, Innsbruck, Austria; President, Austrian Heart Foundation; President and Member, Board of Directors, International College of Angiology; Senior Editor, *International Journal of Angiology*.

**Opening Address**

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

Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York, New York; Director, Long Island Vascular Center, Roslyn, New York.

## Scientific Sessions

Thursday, September 18, 2014 (Continued)

8:15 am – 8:45 am  
First Scientific Session

### International College of Angiology Honorary Fellow Presentation and Special Lecture

#### Introduction By:

##### **Randall W. Franz, MD, FACS, RVT, FICA**

Assistant Professor of Surgery, Ohio State University School of Medicine, Columbus, Ohio; Associate Professor of Surgery, Ohio University School of Medicine, Columbus, Ohio; Chief, Vascular and Endovascular Surgery, Grant Medical Center, Columbus, Ohio; Treasurer and Member, Board of Directors, International College of Angiology; Chairman, Local Organizing Committee, 56<sup>th</sup> Annual World Congress, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

#### Presentation:

### The Changing Tides of Healthcare and How the Affordable Health Care Act will Impact Contemporary Surgical Practice

##### **Michael B. Silva, Jr., MD, FACS, FICA**

Fred J. and Dorothy E. Wolma Professor in Vascular Surgery; Professor of Radiology: Chief, Division of Vascular Surgery and Endovascular Therapy; Director, Texas Vascular Center, University of Texas Medical Branch, Galveston, Texas.

#### Questions and Answers with Audience Participation

8:45 am – 10:15 am  
Second Scientific Session

### Lower Extremity Vascular Disease—Current Management—Medical, Endovascular and Open Procedures

#### Moderators:

##### **Pertti Aarnio, MD, PhD, FICA**

Professor of Surgery, University of Turku, Pori, Finland; Member, Board of Directors and Co-Chairperson, Scientific Committee, International College of Angiology; Treasurer, International College of Angiology; Senior Editor, *International Journal of Angiology*.

##### **Randall W. Franz, MD, FACS, RVT, FICA**

Assistant Professor of Surgery, Ohio State University School of Medicine, Columbus, Ohio; Associate Professor of Surgery, Ohio University School of Medicine, Columbus, Ohio; Chief, Vascular and Endovascular Surgery, Grant Medical Center, Columbus, Ohio; Treasurer and Member, Board of Directors, International College of Angiology; Chairman, Local Organizing Committee, 56<sup>th</sup> Annual World Congress, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

8:45 **Expanding the Use of Covered Stents in Contemporary Vascular Practice:** Michael B. Silva, Jr., MD, FACS, FICA, Fred J. and Dorothy E. Wolma Professor in Vascular Surgery; Professor of Radiology; Chief, Division of Vascular Surgery and Endovascular Therapy; Director, Texas Vascular Center, University of Texas Medical Branch, Galveston, Texas.

9:30 **Your Life on Drugs: Treatment of Peripheral Vascular Disease with Chemically Covered Stents and Balloons:** Gary M. Ansel, MD, FACC, Clinical Assistant Professor of Medicine, Department of Internal Medicine, University of Toledo Medical School, Toledo, Ohio; System Medical Chief, Vascular Program, OhioHealth, Columbus, Ohio.

The primary goal of infrainguinal endovascular therapy is the relief of claudication symptoms or the re-establishment of pulsatile, straight-line flow to the foot and adequate perfusion of the region of tissue compromise and limb threat. Percutaneous treatment should typically be the first revascularization method in properly selected patients to help relieve ischemic rest pain, heal ulcers, prevent limb loss, and improve quality of life and ambulation. Percutaneous balloon angioplasty (PTA) revolutionized the field of cardiology and but now appears at risk to be replaced as the cornerstone of infra-inguinal therapy. As randomized trial data proved superiority to PTA, bare-metal stents frequently also became first line therapy. However, longer-term restenosis still presents a significant challenge for both of these technologies.

Randomized data sets are now accumulating demonstrating significant patency benefits with less need for repeat procedures with the addition of chemicals or drug coverings to both angioplasty balloons and tubular nitinol stents in the femoropopliteal arterial bed. In the tibial vascular bed chemically covered stents have demonstrated a significant patency benefit. However, amputation free survival has not been shown to be improved compared to balloon angioplasty. Likewise recent randomized data for drug coated balloon has not demonstrated any superiority for infra-popliteal occlusive disease even with a trend in patency benefit complexity. In conclusion, drug coated balloons and stents have demonstrated significant safety, patency and clinical benefit compared to bare balloon angioplasty and stents. Since these technologies are in their infancy the delineation of which populations benefit the most is still to be evaluated.

10:15

**COFFEE BREAK**

## Scientific Sessions

Thursday, September 18, 2014 (Continued)

10:30 am – 12:00 Noon

Third Scientific Session

### Venous Disease Treatment

#### Moderators:

#### **Pertti Aarnio, MD, PhD, FICA**

Professor of Surgery, University of Turku, Pori, Finland; Member, Board of Directors and Co-Chairperson, Scientific Committee, International College of Angiology; Treasurer, International College of Angiology; Senior Editor, *International Journal of Angiology*.

#### **Randall W. Franz, MD, FACS, RVT, FICA**

Assistant Professor of Surgery, Ohio State University School of Medicine, Columbus, Ohio; Associate Professor of Surgery, Ohio University School of Medicine, Columbus, Ohio; Chief, Vascular and Endovascular Surgery, Grant Medical Center, Columbus, Ohio; Treasurer and Member, Board of Directors, International College of Angiology; Chairman, Local Organizing Committee, 56<sup>th</sup> Annual World Congress, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

10:30 **Evolving Technologies in Superficial Venous Interventions:** Raghu Kolluri, MD, RVT, RPVI, FACC, FACP, FSVM, Medical Director, Vascular Medicine, Mid-Ohio Cardiovascular, Columbus, Ohio.

11:15 **Management of Acute and Chronic Iliofemoral Venous Occlusion:** Anthony J. Comerota, MD, FACS, FACC, Director, Jobst Vascular Institute, Toledo, Ohio; Adjunct Professor of Surgery, The University of Michigan School of Medicine, Ann Arbor, Michigan.

#### Background

Obstruction of the iliofemoral venous system is associated with severe acute and chronic morbidity. Acute iliofemoral venous thrombosis produces high compartment pressures of the leg. Patients who go on to chronic iliofemoral venous occlusion have persistently high venous pressures leading to venous ulceration or venous claudication in 40-50%.

#### Supporting Evidence

The most effective therapy is removal of the acute thrombus either by operative thrombectomy or catheter-based techniques. However, if patients are treated acutely with only anticoagulation, and develop severe post-thrombotic morbidity, operative and endoluminal disobliteration can be highly effective.

There is a large body of evidence demonstrating the effectiveness of strategies of thrombus removal for iliofemoral DVT. A randomized trial of operative venous thrombectomy vs. anticoagulation demonstrated significantly better outcomes in patients undergoing thrombectomy.<sup>1,2</sup> A cohort-controlled study demonstrated improved quality of life in patients treated with catheter-directed thrombolysis for iliofemoral DVT vs. anticoagulation alone.<sup>3</sup> A small randomized trial of CDT vs. anticoagulation demonstrated significantly improved patency and preserved valve function in patients treated with CDT.<sup>4</sup> A larger Norwegian randomized trial likewise demonstrated that additional catheter-directed thrombolysis reduced post-thrombotic syndrome and that the benefit was directly related to the patency of the iliofemoral venous system.<sup>5</sup> It has been observed that successful thrombus removal results in lower rates of recurrent DVT.<sup>6</sup>

For those patients treated with anticoagulation alone who have persistently occluded iliofemoral systems, a common femoral endovenectomy with endoluminal recanalization can restore unobstructed venous drainage to the vena cava, reduce venous pressures, reduce post-thrombotic morbidity and significantly improve the patient's quality of life.<sup>7,8</sup>

#### References

1. Plate G, Einarsson E, Ohlin P et al. Thrombectomy with temporary arteriovenous fistula: the treatment of choice in acute iliofemoral venous thrombosis. *J Vasc Surg* 1984; 1:867-876.
2. Plate G, Akesson H, Einarsson E et al. Long-term results of venous thrombectomy combined with a temporary arteriovenous fistula. *Eur J Vasc Surg* 1990; 4:483-489.
3. Comerota AJ, Throm RC, Mathias SD, Haughton S, Mewissen M. Catheter-directed thrombolysis for iliofemoral deep venous thrombosis improves health-related quality of life. *J Vasc Surg* 2000 Jul;32(1):130-7.
4. Elsharawy M, Elzayat E. Early results of thrombolysis vs anticoagulation in iliofemoral venous thrombosis. A randomised clinical trial. *Eur J Vasc Endovasc Surg* 2002 Sep;24(3):209-14.
5. Enden T, Haig Y, Klow NE, Slagsvold CE, Sandvik L, Ghanima W, et al. Long-term outcome after additional catheter-directed thrombolysis versus standard treatment for acute iliofemoral deep vein thrombosis (the CaVenT study): a randomised controlled trial. *Lancet* 2012 Jan 7;379(9810):31-8.
6. Aziz F, Comerota AJ. Quantity of Residual Thrombus after Successful Catheter-directed Thrombolysis for Iliofemoral Deep Venous Thrombosis Correlates with Recurrence. *Eur J Vasc Endovasc Surg* 2012 May 31.
7. Comerota AJ, Grewal NK, Thakur S, Assi Z. Endovenectomy of the common femoral vein and intraoperative iliac vein recanalization for chronic iliofemoral venous occlusion. *J Vasc Surg* 2010 Jul;52(1):243-7.
8. Vogel D, Comerota AJ, Al-Jabouri M, Assi ZI. Common femoral endovenectomy with ilio caval endoluminal recanalization improves symptoms and quality of life in patients with postthrombotic iliofemoral obstruction. *J Vasc Surg* 2012 Jan;55(1):129-35.

#### Questions and Answers with Audience Participation

## Scientific Sessions

**Thursday, September 18, 2014 (Continued)**

12:00 Noon – 1:00 pm

**LUNCHEON BREAK**

•

12:00 Noon – 12:30 pm

Fourth Scientific Session

### **New Oral Anticoagulants: Are they Game Changers for our Patients?**

*A Special Luncheon Lecture*

#### **Introduction By:**

##### **John B. Chang, MD, FACS, FICA**

Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York, New York; Director, Long Island Vascular Center, Roslyn.

#### **Presentation By:**

##### **Bauer E. Sumpio, MD, PhD, FACS**

Professor of Surgery and Radiology, Yale University School of Medicine, New Haven, Connecticut; Chief, Vascular Surgery Service, Yale-New Haven Hospital, New Haven, Connecticut; Senior Editor, *International Journal of Angiology*.

Ideally, an oral anticoagulant would require no remote monitoring, have little interaction with food or other drugs, offer a good safety profile with regard to bleeding risk, have similar efficacy to warfarin in reducing thromboembolic events and attain therapeutic levels quickly. There are a new class oral anticoagulants that target Factor II or Factor X and physicians are faced with the dilemma of when to use these drugs and whether patients currently on warfarin should be switched. I will discuss the properties of these new drugs and the indications for their use.

#### **Questions and Answers with Audience Participation**

Thursday, September 18, 2014 (Continued)

12:30 pm – 1:00 pm

Fifth Scientific Session

**Peripheral Arterial Disease and Pulmonary Embolism**

**12:30 Treatment of Sub-massive Pulmonary Embolism at a Tertiary Center using Low-Dose Catheter-Directed Thrombolysis:**

John A. Phillips, MD, FACC; Ali Shadchehr, MD; Melissa Troyan, CNP; Charles F. Botti, MD; Michael S. Jolly, MD; Mitchel J. Silver, DO; Gary M. Ansel, MD; OhioHealth Heart and Vascular Physicians, Columbus, Ohio.

**Background**

Acute pulmonary embolism (PE) can be a life-threatening event that affects approximately 5% of the population during their lifetime. Systemic thrombolysis which improves right ventricular (RV) function, at the cost of increased major bleeding, is reserved for those with hemodynamic instability. Patients with hemodynamic stability and RV dysfunction have increased morbidity and mortality when compared to those with normal RV function, and use of thrombolysis remains controversial.

**Objectives**

We sought to retrospectively assess RV function, and mortality in patients with PE and RV dysfunction treated with catheter-directed thrombolysis (CDT) using low dose tenecteplase (TNK).

**Methods**

From February 2013 through April 2014, 39 patients with acute main or lower lobe PE and with RV dysfunction based on CT or echocardiogram and/or elevated troponin at a single, tertiary-care hospital were taken to the catheterization suite for assessment of pulmonary artery (PA) pressure and possible administration of CDT using TNK. Use of TNK (including route, dose, and duration of therapy) was left to the discretion of the treating physician, based on thrombus burden, degree of RV dysfunction, PA pressure, and risk of bleeding. Retrospective data analysis was performed assessing mortality rate, length of stay, average dose of TNK, and major bleeding complication in patients receiving CDT. RV function was assessed using echocardiography at least one month after discharge.

**Results**

Our results indicated 92% of patients (36/39) had right heart strain on CT or RV systolic dysfunction on echocardiogram, and 58% (21/36) had positive troponin. In total 37 patients (94%) received TNK, with 32 patients treated with CDT alone, average dose of 15 mg. Three patients received a bolus dose of TNK and then infusion, and two received EKOS-catheter directed therapy. There were 4 total deaths, 3 (75%) were in patients with hemodynamic instability, massive PE. The single death from the submassive group (2.7%) occurred 6 months after therapy, from leukemia. Average length of hospital stay 4.6 days. In the patients with submassive PE, there were no major bleeding complications requiring transfusion or intracranial hemorrhage. Of the 32 patients who survived after thrombolytic therapy, 19 had an echocardiogram at least one month after receiving CDT, 18/19 (95%) had complete resolution of RV dysfunction based on subjective assessment, and one had mild residual systolic dysfunction.

**Conclusion**

In this retrospective, single-center assessment, use of low-dose CDT appears to improve RV function and is safe in patients with submassive PE.



12:40 **Clinical Outcomes of Carotid Stenting Performed at a Tertiary Care Community Hospital—A Multi-Specialty Approach:**  
 Mitchel Silver, DO, FACC; Department of Cardiology, OhioHealth Riverside Methodist Hospital, Columbus, Ohio.

**Background**

The first carotid artery angioplasty was done by Kerber in 1980 (1). Initially, percutaneous angioplasty or carotid artery stenting was performed as a palliative treatment option for patients deemed high surgical risk. The procedure has undergone a major transformation with the rapid improvement in interventional technology and improved materials and is now an accepted primary treatment option for carotid artery stenosis. Many trials have compared results and complication rates of percutaneous carotid artery stenting to the classical surgical approach of carotid endarterectomy and have concluded that the less invasive percutaneous approach outcomes are non-inferior to surgery especially when done in centers with high volume of patients and experienced staff.

**Objectives**

To evaluate the hypothesis that the results of carotid stenting done by high volume, fellowship trained catheter procedure based operators, in a cooperative integrated multispecialty approach using interventional cardiologists and neuro-radiologists are superior to results obtained from prior clinical trials and registries.

**Methods**

- Single site retrospective analysis of consecutive carotid artery stenting procedures completed in Federal Drug Administration trials over a 4-year period from 2009-2013.
- IRB approved.
- 266 consecutive patients were included in the data registry.
- Data collected included procedural complications including transient ischemic attack (TIA), cerebral vascular accident (CVA), myocardial infarction (MI) and death.
- Adverse outcomes were determined by an independent neurological exam done in the peri-procedural period and at 30-day follow up.

**Results**

Percutaneous CAS was performed in 266 patients over a 4-year period. Very few complications were noted during the peri-procedural period and at 30 days.

<b>N = 266</b>	<b>Peri-procedural Period</b>	<b>30-Days</b>
Stroke	1 (0.3%)	2 (0.7%)
MI	0	1 (0.3%)
Death	0	0

**Conclusion**

An Integrated multi-specialty approach to carotid artery stenting in a tertiary care community hospital with independent neurologic examination has superior clinical outcomes compared to available clinical trials and registries.

12:50 **Erectile Dysfunction and Peripheral Arterial Disease:** Otto O. Ettala, MD<sup>1</sup>; Päivi E. Korhonen, MD<sup>3,4</sup>; Kari T. Syvänen, MD, PhD<sup>1</sup>; Antti J. Kaipia, MD<sup>2</sup>; Tero J. Vahlberg, MSc<sup>5</sup>; Peter J. Boström, MD<sup>1</sup>; Pertti T. Aarnio, MD, PhD, FICA<sup>2</sup>; <sup>1</sup>Department of Urology, Turku University Hospital, Turku, Finland; <sup>2</sup>Department of Surgery, Satakunta Hospital District, Pori, Finland; <sup>3</sup>Central Satakunta Health Federation of Municipalities, Harjavalta, Finland; <sup>4</sup>Institute of Clinical Medicine, Family Medicine, University of Turku, Turku, Finland; <sup>5</sup>Department of Biostatistics, University of Turku, Turku, Finland.

**Background**

According to the artery size hypothesis, arteriosclerosis affects the small arteries of the penis sooner than the larger coronary arteries of the heart. It is thought, this is why erectile dysfunction (ED) precedes cardiovascular disease. Most probably the issue is similar concerning the association of ED and peripheral arterial disease (PAD) but little is known about this subject.

**Objectives**

The objective of the study is to describe the association of ED and peripheral arterial disease in men without claudication.

**Methods**

The Harmonica project, a cross-sectional population survey, was conducted during the period of 2005 to 2007 in two rural towns of Finland. The study was designed to evaluate cardiovascular risk factors in people aged 45 to 70 years. Subjects with hypertension, impaired glucose tolerance, type 2 diabetes, metabolic syndrome, body mass index  $\geq 30$  kg/m<sup>2</sup> or risk of cardiovascular death of 5% or higher in 10 years according to SCORE were considered as high risk subjects and examined thoroughly by an internist. Thus, the ankle brachial index was measured in 972 subjects, 380 of which were men.

ED was defined by international index of erectile function short form (IIEF-5) using cut-off level of 17 points and PAD by ankle brachial index (ABI). Additionally ABI score was further classified as borderline PAD and PAD using cut-off levels of 0.91-1.00 and  $\leq 0.90$  respectively.

**Results**

Men with moderate to severe ED have a lower mean ABI score compared to men without ED, mean: 1.06 (standard deviation; 0.13) vs. 1.10 (0.10),  $p=0.001$  respectively. Additionally, after adjustment for age, weight, smoking years, high density lipoprotein, fasting glucose, hypertension, education, marital status and symptoms of depression, men with borderline PAD and PAD associated with increasing risk of moderate to severe ED, OR: 2.47 (95% confidence interval, 1.22-5.13) and 3.31 (0.92-11.95),  $p=0.015$  respectively.

**Conclusion**

PAD is associated with an increased risk of ED in men without claudication.

***Questions and Answers with Audience Participation***

## Scientific Sessions

Thursday, September 18, 2014 (Continued)

1:00 pm – 4:30 pm  
Sixth Scientific Session

### Aortic Aneurysms

#### Moderators:

#### John B. Chang, MD, FACS, FICA

Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York; Director, Long Island Vascular Center, Roslyn.

#### John A. Elefteriades, MD, FACS, 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; Co-Editor-in-Chief, *International Journal of Angiology*; Director, Aortic Institute at Yale-New Haven, Yale University School of Medicine, New Haven, Connecticut.

- 1:00 **Endovascular Management of Para-Visceral and Thoracoabdominal Aortic Aneurysms—An Update:** Darren B. Schneider, MD, FACS, FICA, Associate Professor, Department of Surgery, Weill Cornell Medical College; Chief, Vascular and Endovascular Surgery, New York Presbyterian, Weill Cornell Medical Center, New York, New York; Member, Editorial Board, *International Journal of Angiology*.
- 1:30 **Management of Complicated Type B Aortic Dissection:** Joseph V. Lombardi, Sr., MD, FACS, Chief, Division of Vascular and Endovascular Surgery; Associate Professor of Surgery, Cooper Medical School of Rowan University, Director, Cooper Aortic Center, Camden, New Jersey.
- 2:00 **Surgical Management of Thoracic Aortic Aneurysms—Tips and Tricks:** John A. Elefteriades, MD, FACS, 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; Co-Editor-in-Chief, *International Journal of Angiology*; Director, Aortic Institute at Yale-New Haven, Yale University School of Medicine, New Haven, Connecticut.

Aortic aneurysm are among the top 20 causes of death of the US population, with surgery often being the only life-saving treatment option. Based on two decades of experience in treating thoracic aortic pathology at the Aortic Institute of Yale-New Haven Hospital, this presentation reviews several practical tips for the conduct of surgery on the thoracic aorta. This includes interventions on the ascending, descending, and thoracoabdominal segments of the aorta. We discuss basic and advanced techniques for surgical treatment of aortic aneurysms, as well as acute and chronic aortic dissections.

## Scientific Sessions

Thursday, September 18, 2014 (Continued)

2:30 **Genetic Impact of Aortic Aneurysms:** John A. Elefteriades, MD, FACS, 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; Co-Editor-in-Chief, *International Journal of Angiology*; Director, Aortic Institute at Yale-New Haven, Yale University School of Medicine, New Haven, Connecticut.

### Background

We examined the genetic nature and phenotypic features of thoracic aortic aneurysms (TAAs) and dissections in a large cohort of patients.

### Methods

Interviews were conducted with 520 patients with TAAs and their pedigrees were compiled to identify family members with aneurysms. Study patients were divided into three groups: 101 non-Marfan patients, in 88 pedigrees, had a family pattern for TAA (familial group), 369 had no family pattern (sporadic group), and 50 had Marfan syndrome (MFS). We determined incidence of familial clustering, age at presentation, rate of aneurysm growth, incidence of hypertension, correlation of aneurysm sites among kindred, and pedigree inheritance patterns.

### Results

An inherited pattern for TAA was present in 21.5% of non-MFS patients. The predominant inheritance pattern was autosomal dominant (76.9%), with varying degrees of penetrance and expressivity. The familial TAA group was significantly younger than the sporadic group ( $p < 0.0001$ ), but not as young as the MFS group ( $p < 0.0001$ ) (mean ages, 58.2 versus 65.7 versus 27.4 years). Among all 197 probands and kindred with aneurysm, 131 (66.5%) had TAA, 49 (24.9%) had abdominal aortic aneurysm (AAA), and 17 (8.6%) had cerebral or other aneurysms. Ascending aneurysm paired most commonly with ascending, and descending with abdominal. Abdominal aortic aneurysms (AAAs) and hypertension were more often associated with descending than with ascending TAAs ( $p < 0.001$ ). Aortic growth rate was highest for the familial group (0.21cm/y), intermediate for the sporadic group (0.16 cm/y), and lowest for the Marfan group (0.1cm/y;  $p < 0.01$ ).

### Conclusions

TAAs are frequently familial diseases. The predominant mode of inheritance is autosomal dominant. Familial TAAs have a relatively early age of onset. Aneurysms in relatives may be seen in the thoracic aorta, the abdominal aorta, or the cerebral circulation. Screening of first-order relatives of probands with TAA is essential. Familial TAAs tend to grow at a higher rate, exemplifying a more aggressive clinical entity.

3:00

COFFEE BREAK

## Scientific Sessions

**Thursday, September 18, 2014 (Continued)**

3:15 **Outcome and Management of Type II Endoleaks:** Wei Zhou, MD, FACS, FICA, Professor of Surgery, Stanford University School of Medicine, Stanford, California; Chief, Vascular Surgery, VA Palo Alto Health Care System, Palo Alto, California; Member, Editorial Board, *International Journal of Angiology*.

3:45 **Update on Open Repair of Thoracic and Thoracoabdominal Aortic Aneurysms:** Richard Cambria, MD, FACS, Chief, Vascular and Endovascular Surgery, Massachusetts General Hospital, Boston, Massachusetts; Robert R. Linton MD Professor of Vascular and Endovascular Surgery, Harvard Medical School, Boston, Massachusetts.

***Questions and Answers with Audience Participation***

## Scientific Sessions

Thursday, September 18, 2014 (Continued)

4:30 pm – 5:00 pm

Seventh Scientific Session

### Matrix Vascular Patch in Carotid Endarterectomy and Complications of Aortic Valve Replacement

#### Moderators:

#### John A. Elefteriades, MD, FACS, 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; Co-Editor-in-Chief, *International Journal of Angiology*; Director, Aortic Institute at Yale-New Haven, Yale University School of Medicine, New Haven, Connecticut.

#### Sibu P. Saha, MD, MBA, FACS, FICA

Professor of Surgery and Bioengineering; Chief, Division of Cardiovascular and Thoracic Surgery; Frank C. Spender, MD Endowed Chair in Surgery; Chairman, Directors Council, Gill Heart Institute, University of Kentucky College of Medicine, Lexington, Kentucky; Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

4:30 **Vascular Complications Associated with Transfemoral Aortic Valve Replacement:** Brian J. Kelly, MD<sup>4</sup>; Vita Jaspan<sup>1</sup>; John A. Goncalves, Jr., MD<sup>1</sup>; Rose Calixte, PhD<sup>3</sup>; Richard Schwartz, MD<sup>2</sup>; George L. Hines, MD, FACS<sup>1</sup>, Chief, Division of Vascular Surgery; <sup>1</sup>Department of Thoracic and Cardiovascular Surgery, <sup>2</sup>Cardiology Division, and <sup>3</sup>Biostatistics, Winthrop University Hospital, Mineola, New York; <sup>4</sup>Department of Surgery, SUNY Stony Brook, Stony Brook, New York.

#### Objectives

To study the vascular complications of transfemoral aortic valve replacement (TAVR).

#### Methods

This is a retrospective evaluation of patients undergoing TAVR. Standard demographics, femoral vessel and sheath size, method of access [femoral cut down (FC), percutaneous femoral access (PFA) and iliac conduit (IC)] were recorded. Percutaneous access sites were generally closed with 3-mediated closure system sutures. Major and minor complications were defined by the Valve Academic Research Consortium Criteria. Methods of treatment were either open (OR) or percutaneous repair (PR). A Poisson regression and logistic regression analysis were employed for statistical evaluation.

#### Results

In our study, 97 patients underwent TAVR between February 15, 2012 and July 17, 2013 with a transcatheter heart valve. Sheath size ranged from 23-26 Fr. There were 48 males and the mean age was  $83 \pm 7$  yrs. Of those, 33 had FC, 58 had PFA and 6 had an IC. There were 17 major (aortic 2, iliac 15) and 51 minor complications (49 femoral access and 2 peripheral emboli). Aortic complications were managed by open (1) or PC (1) repair, 11 iliac injuries were managed by PR and OR in 4. Groin complications occurred in 19/33 (57%) of the patients with FC, and all were treated by OR. In 30/58 (52%) of patients with PTA and all were treated by PR. There were no differences in transfusion requirements or length of stay between patients who did or did not have an access site complication. There were no instances of limb loss. On univariate analysis, increasing age was associated with an increased risk of vascular injury. There were five 30-day mortalities – 2 mortalities were associated with aortic injury, 1 with iliac injury and 2 had no vascular incidents.

#### Conclusion

Vascular complications of TAVR are common. Most are minor, are related to access site complications and cause no significant immediate sequelae. Iliac injury frequently can be managed by PC methods but occasionally requires OR. Aortic injury is associated with significant mortality. These findings will allow vascular surgeons to be aware of the magnitude of these complications and how to help manage them.

4:40 **Prospective Evaluation of an Extracellular Matrix Vascular Patch in Carotid Endarterectomy:** Geoffrey Blossom, MD, FACS; J. Archer MD; J. Elliot PhD; B. Bechtolt, RN; A. Shaw, RN; B. McElfresh; Riverside Methodist Hospital, Columbus, Ohio.

**Objectives**

To evaluate the use of a recently approved extracellular matrix material for patch angioplasty in carotid endarterectomy. Perioperative and postoperative complications, non-invasive vascular evaluation and clinical evaluation were used to assess the safety and efficacy of the material.

**Methods**

Eighty consecutive patients underwent carotid endarterectomy utilizing an extracellular matrix vascular patch. Prospective evaluation of perioperative complications including cardiac events, hematoma, nerve injury and neurologic events were recorded as well as later complications including neurologic events and re-intervention. Postoperative duplex surveillance was performed at 1-3 months postoperatively and annually.

**Results**

Forty-nine patients were male, 31 female. Thirty-six patients were asymptomatic (45%) and 44 were symptomatic (55%). There were no deaths and no major strokes. Early complications (<30 days) included 1 non-STEMI, 2 minor strokes which resolved, one transient recurrent nerve injury, and 4 neck hematomas requiring return to surgery. All 4 were on multiple anti-platelet agents or warfarin. Seventy-six patients were compliant with duplex surveillance. There were 4 patients with stenosis greater than 60% (5%). One required carotid stenting at 7 months, one was angiographically normal and two are being followed by duplex. There were no pseudoaneurysms. There were no late neurologic events. All procedures were performed under general anesthesia, with a shunt, and using the extracellular matrix as a patch angioplasty.

**Conclusion**

The extracellular matrix vascular patch appears to be a reliable and safe material for use in carotid endarterectomy. No complications were directly attributable to the material. Ongoing duplex surveillance will be necessary to assess the long-term efficacy.

***Questions and Answers with Audience Participation***

**Accreditation**

OhioHealth is accredited by the Ohio State Medical Association to provide continuing medical education (CME) for physicians. OhioHealth designates this live activity for a maximum of 7.75 AMA/PRA Category 1 credit(s)<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in this activity.

Friday, September 19, 2014

7:30 am – 8:00 am

Eighth Scientific Session

Scientific Poster Presentations

Moderators:

**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; Consulting Editor, *International Journal of Angiology*; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

**Edward Ross, MD, FACC, FICA**

Clinical Professor of Cardiology, Indiana University School of Medicine, Indianapolis, Indiana; Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

7:30 **Comparison of Cardiac MRI and Echocardiography Derived Ejection Fraction in Doxorubicin-Induced Cardiomyopathy:**

Tahir Tak, MD, PhD, FICA, FACC<sup>1,2</sup>; Shahyar M. Gharacholou, MD<sup>1,2</sup>; Camilla M. Jaekel, RN<sup>3</sup>; Angus Scott Marshall, MD<sup>4</sup>; James Novotany, MD<sup>5</sup>; <sup>1</sup>Division of Cardiovascular Diseases, Mayo Clinic Health System-Franciscan Healthcare, La Crosse, Wisconsin; <sup>2</sup>Mayo Clinic, Departments of <sup>3</sup>Research, <sup>4</sup>Radiology and <sup>5</sup>Division of Hematology and Oncology, Rochester, Minnesota.

**Background**

Doxorubicin is used to treat various malignancies, yet the clinical benefits are offset by cardiotoxicity which can result in heart failure.

**Objectives**

We compared left ventricular ejection fraction (LVEF) by cardiac magnetic resonance imaging (cMRI) and echocardiography (ECHO) in patients receiving doxorubicin to determine whether the imaging modalities provided similar or incremental information in these patients.

**Methods**

We prospectively studied 27 patients that presented for treatment of breast cancer or lymphoma and were treated with doxorubicin with curative intent dosing (240-300 mg/m<sup>2</sup>). All patients underwent assessment of LVEF at baseline. For cMRI, LVEF was determined using planimetry of endocardial and epicardial contours in diastole and systole. For ECHO, LVEF was determined using Simpson's biplane method. Cardiac imaging with both modalities was repeated after 4 cycles of doxorubicin. LVEF was calculated for both modalities and the observed differences were analyzed for statistical significance. A p-value of <0.05 was considered statistically significant.

**Results**

Eighteen patients (67%) completed post imaging after 4 cycles of doxorubicin. The mean age of the patients was 55.9 years (range: 39-78 years). The mean baseline LVEF by ECHO was 61.5 % vs 61.8% by MRI (p = NS). After doxorubicin, LVEF by ECHO was 60.9% vs 57.1% by cMRI (p<0.05). There was a significant change in LVEF as assessed by cMRI, but not by ECHO, for pre and post doxorubicin treatment. cMRI findings alone did not impact patient management and was not associated with any specific patient outcome. One patient developed symptoms of heart failure accompanied by a decrease in LVEF on cMRI, but not by ECHO.

**Conclusion**

LVEF derived by cMRI and ECHO have comparable results; however, cMRI appears to be more sensitive than ECHO in detecting a decrease in LVEF among doxorubicin-treated patients. Superior spatial resolution of cMRI, along with not being limited by acoustic windows as in the case for ECHO, may support its better accuracy. These findings have implications for therapeutic studies involving agents with potential cardiotoxic effects.



7:37 **Venous Thromboembolism Prophylaxis in Hospitalized Patients at Tan Tock Seng Hospital, Singapore:** Pankaj K. Handa, MD, MRCP(Ire), FRCP(Ire), FAMS(Int.Med.), FICA; Hwei K. Lee; Ashish A. Sule, MD, FICA; Internal Medicine, Vascular Medicine and Hypertension, Department of General Medicine, Tan Tock Seng Hospital, Singapore; Associate Regional Secretary, International College of Angiology.

#### **Background**

Venous thromboembolism (VTE) is often thought to be less common in Asians. In Singapore, thromboprophylaxis in hospitalized patients is not practiced as frequently as it should be. Recent studies have shown an increasing incidence of VTE in hospitalized Asian patients.

#### **Purpose**

Our purpose was to determine whether the infrequent practice of thromboprophylaxis in hospitalised patients in Singapore, based on the belief of very low incidence of VTE, was justified.

#### **Materials and Methods**

All patients hospitalized with the diagnosis of venous thromboembolism (VTE) including deep vein thrombosis (DVT), pulmonary embolism (PE) or both at Tan Tock Seng Hospital, Singapore, over a 2-year period from October 2010 to December 2012 were identified, and their records were retrospectively reviewed. The diagnosis of DVT was based on Doppler ultrasound findings and that of PE was confirmed by CT pulmonary angiogram. Subsequently, the medical records were analysed to confirm whether they had been hospitalized within the previous 1 month prior to presenting with VTE.

#### **Results**

There were 314 confirmed cases of VTE (DVT, PE or both) during the 2-year study period. Mean age was 64.2 years (SD  $\pm$  0.9). There were 182 females (58%) and 132 males (42%). Ethnicity conformed to the racial distribution in Singapore. There were 212 Chinese (67.5%), 39 Malay (12.4%), 34 Indian (10.8%), 4 Eurasians (1.3%) and 25 others (8%). DVT was diagnosed in 177 patients (56.4%), PE in 91 (29.0%), and both PE and DVT in 46 (14.6%). Hospital admission 1-month prior to development of VTE was noted in 127 out of 314 patients (40.4%). Of these, 127 patients were confirmed to have prior hospital admissions, 76 cases (59.8%) were prior medical admissions and 51 cases (40.2%) were prior surgical admissions.

#### **Conclusion**

Our study suggests that hospitalization is a significant risk for VTE in Singapore. Therefore, VTE prophylaxis should be practiced in high risk hospitalized patients.

### ***Questions and Answers with Audience Participation***

Friday, September 19, 2014 (Continued)

8:00 am – 11:15 am

Ninth Scientific Session

**CEA and CAS**

**Moderators:**

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

Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York, New York; Director, Long Island Vascular Center, Roslyn.

**Wei Zhou, MD, FACS, FICA**

Professor of Surgery, Stanford University School of Medicine, Stanford, California; Chief, Vascular Surgery, VA Palo Alto Health Care System, Palo Alto, California; Member, Editorial Board, *International Journal of Angiology*.

8:00 **Techniques of Carotid Endarterectomy:** John B. Chang, MD, FACS, FICA, Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York, New York; Director, Long Island Vascular Center, Roslyn, New York.

**Background**

Carotid Endarterectomy (CEA) is performed to prevent and minimize the risks of stroke.

**Objectives**

Surgical techniques will be presented with a comparative analysis between primary repair vs. vein patch and their long-term outcome. Other CEA procedures for the management of carotid kink and high bifurcation/distal lesions will be discussed.

**Methods**

This presentation will include a retrospective review of patients who had CEA, and an analysis of their long-term follow-up results beyond 15 years.

**Results**

Long-term results of stroke-free rate, stroke-free survival and the rate of recurrent stenosis have been reviewed. The results were found to be superior in the patient group who received vein patch in comparison to the group who had primary repair after CEA.

**Conclusion**

Peri-operative stroke prevention rate and long-term outcome are acceptable with CEA. The long-term follow-up studies have shown superiority with the vein patch technique after CEA.

## Scientific Sessions

Friday, September 19, 2014 (Continued)

8:30 **Assessing the Embolization Potential of Carotid Plaque:** Vikram S. Kashyap, MD, FACS, Professor of Surgery, Case Western University School of Medicine, Cleveland, Ohio; Chief and Program Director, Division of Vascular Surgery and Endovascular Therapy, Co-Director, Harrington Heart and Vascular Institute, Director, Vascular Center, University Hospitals Case Medical Center, Cleveland, Ohio.

9:00 **Timing of CEA after Acute Stroke and TIA:** Mark K. Eskandari, MD, FACS, The James S.T. Yao, MD, PhD, Professor of Education in Vascular Surgery; Professor, Feinberg School of Medicine, Northwestern University, Division of Vascular Surgery, Department of Radiology, and Division of Cardiology, Chicago, Illinois; Chief and Program Director, Division of Vascular Surgery, Northwestern Memorial Hospital, Chicago, Illinois.

### Background

Delayed carotid endarterectomy (CEA) after a stroke or transient ischemic attack (TIA) is associated with risks of recurrent neurologic symptoms. In an effort to preserve cerebral function, urgent early CEA has been advocated in some circumstances. We analyzed outcomes of early CEA in comparison with delayed surgery.

### Methods

Retrospective, single center chart review between April 1999 and November 2010 revealed 312 patients who underwent CEA following stroke or TIA. Of these 312 patients, 69 received their CEA within 30 days of symptom onset and 243 received their CEA after 30 days from symptom onset. The early CEA cohort was further stratified according to the timing of surgery: Group A (27 patients), within 7 days; Group B (17), between 8 and 14 days; Group C (12), between 15 and 21 days; and Group D (12), between 22 and 30 days. Demographic data as well as 30-day (mortality, stroke, TIA, and myocardial infarction) and long-term (all-cause mortality and stroke) adverse outcome rates were analyzed for each group. These were also analyzed for the entire early CEA cohort and compared against the delayed CEA group.

### Results

Demographics and co-morbid conditions were similar between groups. For 30-day outcomes, there were no deaths, 1 stroke (2.4%), 0 TIAs, and 0 myocardial infarctions in the early CEA cohort; in the delayed CEA cohort, there were 4 (1.6%), 4 (1.6%), 2 (0.8%), and 3 (1.2%) patients with these outcomes, respectively ( $p > 0.05$  for all comparisons). Over the long-term, the early group had 1 ipsilateral stroke at 17 months and the delayed group had 2 ipsilateral strokes at 3 and 12 months. For long-term outcomes, there were 16 deaths in the early CEA cohort (21%) and 74 deaths in the delayed CEA cohort (30%,  $p > 0.05$ ). Mean follow-up times were 4.5 years in the early CEA cohort and 5.8 years in the delayed CEA cohort.

### Conclusion

There were no differences in 30-day and long-term adverse outcome rates between the early and delayed CEA cohorts. In symptomatic carotid stenosis patients without evidence of intracerebral hemorrhage, carotid occlusion, or permanent neurologic deficits early carotid endarterectomy can be safely performed and is preferred over delaying operative treatment.

Scientific Sessions

Friday, September 19, 2014 (Continued)

9:30 **“Stop the Stroke”—Emergent Stroke Intervention:** Ronald F. Budzik, Jr., MD, Riverside Radiology and Interventional Associates, Co-Medical Director, Interventional Neuroradiology/Neurointerventional Surgery, Chair, Neuroscience Clinical Operations Council, Co-Director, Riverside Comprehensive Stroke Center, OhioHealth, Riverside Methodist Hospital, Columbus, Ohio.

10:00

COFFEE BREAK

## Scientific Sessions

Friday, September 19, 2014 (Continued)

10:15 **What is the Present and Possible Future Role of CAS for the Treatment of Carotid Stenosis? Symptomatic and Asymptomatic:** Frank J. Veith, MD, FACS, FICA, Honorary Fellow, International College of Angiology; Professor of Surgery, Cleveland Clinic, Cleveland Ohio and New York University, New York, New York; The William J. von Liebig Chair in Vascular Surgery, The Cleveland Clinic Foundation, Cleveland, Ohio.

This presentation addresses the issue of optimal contemporary management of symptomatic and asymptomatic carotid artery stenosis. Based on current data, carotid endarterectomy (CEA) should be performed in the majority of patients with symptomatic carotid artery stenosis. Carotid artery stenting should be reserved for a minority of these symptomatic patients, in whom CEA is contraindicated. In asymptomatic patients, all should be placed on best medical treatment (BMT). With the use of one or more of the proposed stroke risk stratification models or some as yet undetermined method, the identification of those asymptomatic individuals may be possible in whom stroke risk is higher than usual with BMT. This asymptomatic subgroup, which may be small and is yet to be determined with certainty, could be offered an invasive carotid procedure.

Scientific Sessions

Friday, September 19, 2014 (Continued)

10:45 **What are the Indications for Carotid Endarterectomy and Carotid Artery Stenting? Asymptomatic:** Alan B. Lumsden, MD, ChB, RVT, FACS, Professor and Medical Director, Methodist DeBakey Heart and Vascular Center, The Methodist Hospital, Houston, Texas.

*Questions and Answers with Audience Participation*

Scientific Sessions

Friday, September 19, 2014 (Continued)

11:15 am – 12:00 Noon

Tenth Scientific Session

**Debate on CEA vs CAS in the Management of Symptomatic and Asymptomatic Carotid Artery Stenosis**  
*A Discussion and Debate*

Frank J. Veith, MD FACS, FICA vs. Alan B. Lumsden, MD, ChB, RVT, FACS

•  
12:00 Noon – 1:00 pm

**LUNCHEON BREAK**



## Scientific Sessions

Friday, September 19, 2014 (Continued)

12:00 Noon – 12:30 pm  
Eleventh Scientific Session

### Characterization of Inflow and Outflow Channels of Endoleaks by Computed Tomographic Angiography— Technical Considerations, Methods of Interpretation and Clinical Significance *A Special Luncheon Lecture*

#### Introduction By:

##### **Sibu P. Saha, MD, MBA, FACS, FICA**

Professor of Surgery and Bioengineering; Chief, Division of Cardiovascular and Thoracic Surgery; Frank C. Spender, MD Endowed Chair in Surgery; Chairman, Directors Council, Gill Heart Institute, University of Kentucky College of Medicine, Lexington, Kentucky; Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

#### Presentation By:

##### **Michael A. Winkler, MD, FSCCT, FICA<sup>1,2</sup>**

<sup>1</sup>Assistant Professor of Radiology, Internal Medicine, and Cardiology; Department of Radiology; Ryan H. Penticuff<sup>2</sup>; Kevin P. Landwehr<sup>2</sup>; Sibu P. Saha, MD, MBA, FICA<sup>3</sup>; Eric D. Endean, MD<sup>3</sup>; <sup>2</sup>Gill Heart Institute Inter-divisional Advanced Image Research Group; <sup>3</sup>Department of Surgery; University of Kentucky Medical Center, Lexington, Kentucky.

The term “endoleak” was coined by GH White et al, in 1996. They described an “endoleak” as blood flow outside an endograft within the aneurysm sac. Subsequently they recommended distinguishing between endoleaks with and without outflow channels. Reporting of detection and significance of outflow channels in Computed Tomographic Angiography (CTA) has been very limited. The most significant paper thus far restricts analysis to post Endovascular Aortic Repair (EVAR) CTA performed within 72 hours of endograft placement.

#### Objectives

We will discuss the potential of CTA to characterize the inflow and outflow channels of endoleaks and the importance of such findings.

#### Methods

Our method of CTA utilizes multi-kernel reconstructions, sub-millimeter slice thickness, reconstruction intervals with 50% z-axis overlap, and advanced dynamic 3-dimensional reformatting. We opine our technique can reliably determine the presence or absence of inflow and outflow channels of any endoleak. We distinguish between inflow and outflow channels on the basis of channel size, associated flow-limiting lesions, and by gradients of contrast enhancement within the aneurysmal sac. For this presentation we will display illustrative post EVAR CTA cases, showing various combinations of inflow and outflow channels. We will detail how we acquired each scan, discuss our interpretation, and provide clinical correlation.

#### Results

Endoleaks with both inflow and outflow channels more often persist or grow than endoleaks with only one channel. The inflow channel of an endoleak is higher in pressure than the outflow channel. This can be considered when planning treatment, as occlusion of the higher pressure channel may have a more favorable outcome and obviate the need to treat other channels, thereby limiting the effort and duration of an intervention. Our hope is to generate greater interest in advanced post EVAR CTA as performed with our methods and foster inter-institutional collaborative research on this topic.

#### Conclusions

CTA has the capacity to characterize inflow and outflow channels of endoleaks. These findings are clinically relevant.

#### ***Questions and Answers with Audience Participation***

Friday, September 19, 2014 (Continued)

1:00 pm – 2:00 pm

Thirteenth Scientific Session

**EVAR for the Treatment of AAA's and Current Practice for TEVAR**

**Introduction By:**

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

Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York, New York; Director, Long Island Vascular Center, Roslyn.

1:00 **Present Status of EVAR for Treating Ruptured AAA's Including the Impact of RCT's:** Frank J. Veith, MD, FACS, FICA, Honorary Fellow, International College of Angiology; Professor of Surgery, The Cleveland Clinic, Cleveland, Ohio and New York University, New York New York; The William J. von Liebig Chair in Vascular Surgery, The Cleveland Clinic Foundation, Cleveland, Ohio.

**Background**

Case and single center reports have documented the feasibility and suggested the effectiveness of endovascular graft repair (EVAR) of ruptured abdominal aortic aneurysms (RAAAs), but the role and value of such treatment remain controversial.

**Objective**

To clarify these we examined a collected experience with use of EVAR for RAAA treatment from 49 centers.

**Methods**

Data was obtained by questionnaires from these centers, updated from 13 centers committed to EVAR treatment whenever possible and included treatment details from a single center and information on 1037 patients treated by EVAR and 763 patients treated by open repair (OR).

**Results**

Overall 30-day mortality after EVAR in 1037 patients was 21.2 %. Centers performing EVAR for RAAAs whenever possible did so in 28-79% (mean 49.1%) of their patients, had a 30-day mortality of 19.7% (range 0-32%) for 680 EVAR patients and 36.3% (range 8-53%) for 763 OR patients ( $p < .0001$ ). Supraceliac aortic balloon control was obtained in  $19.1 \pm 12.0\%$  ( $\pm$ SD) of 680 EVAR patients. Abdominal compartment syndrome was treated by some form of decompression in  $12.2 \pm 8.3\%$  ( $\pm$ SD) of these EVAR patients.

**Conclusion**

These results indicate that EVAR has a lower procedural mortality at 30 days than OR in at least some patients and that EVAR is better than OR for treating RAAA patients provided they have favorable anatomy; adequate skills, facilities and protocols are available; and optimal strategies, techniques and adjuncts are employed.

Scientific Sessions

Friday, September 19, 2014 (Continued)

1:30 **Update and Current Practices for TEVAR:** Alan B. Lumsden, MD, ChB, RVT, FACS, Professor and Medical Director, Methodist DeBakey Heart and Vascular Center, The Methodist Hospital, Houston, Texas.

*Questions and Answers with Audience Participation*

Friday, September 19, 2014 (Continued)

2:00 pm – 3:30 pm

Fourteenth Scientific Session

## Preventative Management of Cardiovascular Disease and an Update in the Medical Management of Coronary Artery Disease

### Moderators:

#### Univ.-Prof. Dr. Otmar M. Pachinger, MD, FESC, FAHA, FICA

Professor Emeritus, Distinguished Professor of Cardiology, Medical University of Innsbruck, Innsbruck, Austria; President, Austrian Heart Foundation; President and Member, Board of Directors, International College of Angiology; Senior Editor, *International Journal of Angiology*.

#### Iwan Dakota, MD, PhD, FICA, FACC, FESC, FSCAI

Director, General Affairs, National Cardiovascular Center Harapan Kita, Vascular Division, Department of Cardiology and Vascular Medicine, Jakarta, Indonesia; Faculty of Medicine, University of Indonesia, Jakarta, Indonesia; Regional Secretary, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

2:00 **Does Oxidative Stress Play a Role in the Added Sugar-induced Cardiovascular Disease?** Kailash Prasad, MBBS (Hons), MD, PhD, FRCPC, FACC, FICA, FIACS<sup>1</sup>, 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; Consulting Editor, *International Journal of Angiology*; Indu Dhar, PhD<sup>2</sup>; Gudrun Caspar-Bell<sup>3</sup>; Department of <sup>1</sup>Physiology and Pharmacology<sup>2</sup>, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada; <sup>3</sup>Department of Medicine, Royal University Hospital, University of Saskatchewan, Saskatoon, Canada.

### Background

Added sugars have been implicated in the pathophysiology of cardiovascular diseases.

### Objectives

The objectives are to review the generation of reactive oxygen species (ROS) by sugars and correlate the ROS with added sugar-induced cardiovascular disease.

### Methods

Literature search.

### Results

Sugars induce generation of ROS through mitochondria, nicotinamide adenine dinucleotide phosphate-oxidase (NADH-oxidase), sorbitol pathway, advanced glycation end products, insulin and uric acid. Added sugars have been implicated in the development of atherosclerosis, hypertension, coronary artery disease, cardiomyopathy, heart failure, cardiac arrhythmias and peripheral vascular disease. ROS have been shown to produce all of the above diseases associated with added sugars.

### Conclusion

The data suggest that added sugars are involved in the development of cardiovascular disease and that these diseases are mediated through ROS generated by sugars.

2:30 **Cardiovascular Physiology and Disease Prevention at High Altitude:** Thomas F. Whayne, Jr., MD, PhD, FACC, FICA, Professor of Medicine (Cardiology), Division of Cardiovascular Medicine, Gill Heart Institute, University of Kentucky, Lexington, Kentucky; Vice President, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

There is a rich literature of altitude medicine and physiology. However, this is not in the general sphere of interest of most clinicians. The purpose of this talk is to provide a comprehensive review of the history and latest knowledge involving cardiopulmonary physiology, medicine, and treatment of clinical problems at high altitude. Knowledge of high-altitude physiology began with Paul Bert in 1878 and since then, there has been an explosion of knowledge and understanding of high-altitude physiology and medicine. Chronic mountain sickness was initially defined by Carlos Monge in the Peruvian Andes as consisting of excessive polycythemia for the altitude of residence.<sup>1</sup> Subsequently, Hurtado and colleagues<sup>2</sup> performed pioneering altitude studies in the Peruvian Andes in the 1950s and 1960s that defined adaptive and acclimatization changes in the healthy altitude native, including polycythemia and a moderate, but constant degree of pulmonary hypertension in contrast to a low systemic blood pressure (BP). They also found frequent electrocardiographic alterations consistent with right ventricular hypertrophy (RVH). Another interesting observation was an increased incidence of patent ductus arteriosus in this population. Acclimatization of newcomers to high altitude specifically involves hyperventilation stimulated by the effect of hypoxia on the carotid bodies. There are two abnormal clinical manifestations of high-altitude exposure experienced by susceptible individuals. The first is acute mountain sickness (AMS) seen in travelers to altitude from near sea level, and most likely characterized by hypoxia-induced anorexia, dyspnea, headache, insomnia, lightheadedness, and nausea. The extremes of AMS are high-altitude cerebral edema and high-altitude pulmonary edema, both of which can be life-threatening and necessitate descent to a lower altitude if possible. Additionally, the susceptible high-altitude resident can lose their tolerance to altitude and develop chronic mountain sickness (CMS), also referred to as Monge's disease.<sup>1</sup> The most notable aspects of CMS include extreme polycythemia with erythrocytosis to a hematocrit of 80%, severe RVH, accentuated pulmonary hypertension, a low systemic BP, excess arterial oxygen desaturation, and hypoventilation, including a decreased carotid body response to hypoxia and a decreased central respiratory center response to increased CO<sub>2</sub>.<sup>3</sup> Genetics may play a role in CMS and it can be regarded as a public health problem that can be benefited by attention to modifiable risk factors such as smoking, obesity, air pollution, and improvement in treatable pulmonary diseases. Special considerations for AMS include increased risk from more advanced age, altered coagulation, increased risk for the congenital heart disease patient, increased risk from coronary heart disease, higher incidence with early intense exercise, risk from obesity, retinopathy, and sleep apnea. Temporary or prolonged exposures to altitude are usually not associated with significant problems but when adaptive mechanisms go haywire, serious clinical entities occur that the medical practitioner must be prepared to diagnose and deal with.

#### REFERENCES

1. Monge C. Life in the Andes and Chronic Mountain Sickness. *Science*. 1942;95(2456):79-84.
2. Hurtado A. Some clinical aspects of life at high altitudes. *Ann Intern Med*. 1960;53:247-258.
3. Whayne TF, Jr. Cardiovascular Medicine at High Altitude. *Angiology*. 2013. doi 10.1177/0003319713497086

3:00 **Sympathovagal Balance—Prognostic Indicator for Coronary Disease and Congestive Heart Failure:** Gary L. Murray, MD, FICA, FACC, FASNC, FSCASI, Heart and Vascular Institute, Germantown, Tennessee.

**Background**

Spectral heart rate variability (HRV), low- and high-frequency as well as total spectral power, has prognostic value for predicting major adverse cardiac events (MACE). However, low- to high- frequency activity (LFa ÷ Hfa = sympathovagal balance [SB]) has not demonstrated prognostic value, possibly because traditionally recorded LFa is a mixed measure of sympathetic (S) and parasympathetic (P) activity.

**Objective**

To unscramble LFa using commercially available software that displays simultaneous time-frequency analysis of HRV and respiratory activity, yielding simultaneous, independent measures of S and P tone with a true measure of SB.

**Methods**

Four-hundred eighty-three subjects with risk factors for coronary disease (RCD, [Group 1, N=127]), CD(Group 2, N=224), and congestive heart failure (CHF,[Group 3, N=132]) had yearly myocardial perfusion stress tests (MPI), echocardiograms (2DE), and semiannual 5 min. SB measurements in the seated, upright position. MACE (new angina, acute coronary syndromes, acute CHF, appropriate defibrillator therapies, cardiac deaths) were recorded during a mean follow-up of 4.92 years. The Framingham Risk Score (FRS) was calculated in Group 1.

**Results**

For predicting MACE, SB>2.5 out-performed MPI and 2DE in Groups 1, 2 and 3: approximately twice as many Group 1 and 2 patients with MACE had SB>2.5 as had +MPI; 1.22 x Group 3 patients with MACE had SB>2.5 as had 2DE left ventricular ejection fraction<0.32. In Group 1, the mean FRS in MACE patients was 14.5% and 12.1% in MACE-free subjects. Positive predictive values of SB>2.5 were: Group 1, 44%; Group 2, 71%; Group 3, 66%. Negative predictive values of SB≤2.5 were: Group 1, 92%; Group 2, 68%; Group 3, 79%.

**Conclusion**

SB, as measured herein, provides independent prognostic information regarding MACE in CD and CHF at a fraction of the cost of MPI and 2DE. In asymptomatic and symptomatic subjects, SB>2.5 merits further evaluation with MPI and/or 2DE. When SB is ≤2.5, usually no further diagnostic testing is needed.

**I have No Conflict of Interest; this presentation does include off-label use of ranolazine that will be disclosed to the audience prior to presentation.**

3:10 **Chest Irradiation Associated Cardiovascular Disease:** Malka Yahalom, MD, DSc, FICA<sup>1,2,3,5</sup>; Ehud Rozner, MD<sup>1,4</sup>; Yoav Turgeman, MD<sup>1,4</sup>; <sup>1</sup>Heart Institute, HaEmek Medical Center, Afula, Israel; <sup>2</sup>Adjunct Senior Lecturer Emeritus, Rappaport Faculty of Medicine, Technion, Haifa, Israel; <sup>3</sup>Director Emeritus, Pacemaker Unit, Western Galilee Hospital, Nahariya, Israel; <sup>4</sup>Rappaport School of Medicine, Technion, Haifa, Israel; <sup>5</sup>Member, Editorial Board, *International Journal of Angiology*.

**Background**

The heart and great vessels were once thought to be relatively resistant to the damaging effects of irradiation therapy. There is now clear evidence that thoracic irradiation may cause acute inflammation and progressive fibrosis of the different thoracic structures including coronary arteries and the conduction system. As new therapies have improved survival, many patients with cancer (mostly Hodgkin's disease and breast cancer) are now at risk of cardiovascular (CV) complications of radiation therapy.

**Objectives**

To raise awareness of CV complications, following chest irradiation.

**Methods**

We present 3 patients who presented with CV complications after chest irradiation.

**First Case:** A 42-year-old male was presented with dizziness and 2:1 AV Block 2-years post-CABG. Twenty-five years earlier, the patient had been treated with radiotherapy to the mediastinum for lymphoma. A chest CT revealed calcification of 3 coronary arteries, aortic root of aorta, aortic valve and mitral annulus. This patient was treated with a permanent pacemaker.

**Second Case:** A 60-year-old female, who was treated at childhood by radiation therapy to her upper chest and neck for cervical neuroblastoma, presented with dyspnea at effort for the past 10 years, with the clinical and laboratory evidence of severe pulmonary stenosis and documented normal coronary arteries. She was successfully treated by pulmonary balloon valvuloplasty.

**Third Case:** A 56-year-old female, treated 2-years earlier with left chest irradiation for breast cancer, complaining of effort angina, had a positive exercise test. A cardio catheterization was performed, indicating evidence of two vessel disease, which was successfully treated by PCI.

**Results**

Thus, during a short period (less than 2 years) we have met 3 patients who suffered CV involvement, following chest irradiation therapy.

**Conclusion**

Patients undergoing chest irradiation should be followed periodically, in order to diagnose and treat CV complications.

**Questions and Answers with Audience Participation**

3:30

**COFFEE BREAK**

Friday, September 19, 2014 (Continued)

3:45 pm – 4:30 pm

Fifteenth Scientific Session

**Thrombosis, Diabetic Foot and Hypogastric Artery Embolization in Obstetrics and Gynecology**

**Moderators:**

**Elie D. Aboulaflia, MD, MSc (Surg), RVT, RPVI, FACS, FICA**

Clinical Professor of Surgery, Michigan State University, Lansing, Michigan; Clinical Professor of Medicine, Wayne State University, Detroit, Michigan; Member, Board of Directors, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*; Member, Board of Trustees, International College of Surgeons (United States Section); Farmington Hills, Michigan.

**Rajinder P. Sharma, MD, FICA**

Associate Professor of Radiology, Wayne State University School of Medicine; Former Senior Staff, Interventional Radiology, Detroit, Michigan; Member, Board of Directors and President-Elect, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

**3:45 Arterial and Venous Thrombosis with Protein C Deficiency Presenting as Cerebral Infarct and Pulmonary Embolism—A**

**Case Report:** Ashish Anil Sule, MBBS, MD (Int Med), MRCP (UK), FAMS (Int Med), FICA, FRCP(UK), European Hypertension Specialist (ESH specialist); Benedict Azucena, MD, AFICA; Annamarie Borja, MD, AFICA; Aissa Althea Flavier-Hundal, MD; Department of General Medicine, Tan Tock Seng Hospital, Singapore.

**Background**

Protein C deficiency is associated with thrombotic risk and a common presentation is venous thrombosis. There have been reports of arterial thrombosis associated with protein C deficiency. However, whether protein C deficiency is a risk factor for the development of arterial thrombosis has not been established. Additional information is required on the natural history of protein C deficiency.

**Case Report**

A 36-year old male was admitted for right middle cerebral artery territory infarct. The work-up for young stroke revealed he had protein C deficiency. Protein C level on presentation was 59% (normal 70-150%), indicating normal to low normal. However, approximately 3-years later, the same patient presented with extensive deep vein thrombosis and pulmonary embolism with no other predisposing factors.

**Investigations and Laboratory Workup**

Fasting glucose 5.3 mmol/L, low density lipoprotein 4.0 mmol/L, triglyceride 3.1 mmol/L. Magnetic resonance imaging and angiogram of the brain indicated acute right middle cerebral artery territory infarct and right middle cerebral artery obstruction. An ultrasound of the carotids were normal. Thrombophilia screen showed low protein C activity and APC resistance test, the rest were normal. When he was admitted for leg swelling, an ultrasound Doppler of lower limbs was performed indicating extensive deep vein thrombosis extending from the left external iliac vein up to the left popliteal vein. A CT pulmonary angiogram revealed multiple filling defects in the pulmonary vasculature.

**Progress**

Thrombolytic therapy was initiated soon after the stroke followed by control of risk factors and antiplatelet therapy. After rehabilitation, this patient had a very good functional recovery. He was compliant in taking aspirin over the following years until he developed a pulmonary embolism and deep vein thrombosis (on aspirin). This patient was then switched to anticoagulation with low molecular weight heparin and then warfarin.

**Conclusion**

Protein C deficiency is commonly known to present with venous thrombosis. Dual (arterial and venous) thrombosis and protein C deficiency is not common. Antiplatelet therapy is the treatment of arterial thrombosis. It is indeed controversial regarding the role of anticoagulation in a young patient who presents with arterial thrombosis and protein C deficiency.



3:55 **Favorable Outcome of Two Cases of Elderly Patients with First Presentation of May-Thurner Syndrome (MTS) Treated with Thrombolysis Followed by Stenting:** Ashish Anil Sule, MBBS, MD (Int Med), MRCP (UK), FAMS (Int Med), FICA, FRCP(UK), European Hypertension Specialist (ESH specialist); Annamarie Borja, MD, AFICA; Aissa Althea Flavier-Hundal, MD; Benedict Azucena, MD, AFICA; Department of General Medicine, Tan Tock Seng Hospital, Singapore.

**Background**

MTS is the compression of the left common iliac vein between the overlying right common iliac artery and the underlying vertebral body.

**Case Report 1**

A 70-year old female was admitted for extensive deep vein thrombosis (DVT) of the left lower leg and was found to have MTS.

**Investigations and Laboratory Workup**

Doppler ultrasound showed DVT in the left common femoral, femoral and popliteal veins. Venogram showed the thrombosis extending into the left external and internal iliac veins and left common iliac veins, with the proximal left common iliac vein being compressed by the right common iliac artery. APC resistance test was low and the rest of the thrombophilia screen was normal. Abdominal computed tomography showed no evidence of malignancy.

**Progress**

Patient was given low molecular weight heparin (LMWH) followed by inferior vena cava (IVC) filter insertion with catheter-directed thrombolysis. A stent was inserted to the left common iliac vein due to its persistent occlusion. Patient was discharged with warfarin and clinically had no swelling or post-thrombotic syndrome.

**Case Report 2**

A 72-year old female had extensive DVT of the leg lower leg and venogram showed MTS.

**Investigations and laboratory Workup**

Left lower limb Doppler ultrasound and venogram showed extensive DVT from the left common iliac vein down to the left popliteal vein, likely due to compression of the left common iliac vein by the right iliac artery. Malignancy screening was negative.

**Progress**

Patient was given LMWH and underwent thrombectomy followed by thrombolysis with stent insertion due to stenosis of the iliac vein. She was subsequently discharged with warfarin and complete resolution of leg swelling.

**Conclusion**

Patients with left iliac vein thrombosis should always be investigated to rule out May-Thurner Syndrome. Chances of post-thrombotic syndrome are reduced if patients are treated early with thrombolysis and stenting, followed by anticoagulation. Our cases demonstrate that it is possible to have MTS as the first presentation even after age of 70 years.

4:05 **Prevalence, Trends and Magnitude of Diabetic Foot Amputation in Egypt:** Sherif Shalaby, MD, AFICA<sup>1</sup>; G.E. Hammouda, MB, BCh<sup>2</sup>; Bauer E. Sumpio, MD, PhD<sup>1</sup>; <sup>1</sup>Section of Vascular Surgery, Department of Surgery, Yale University School of Medicine, New Haven, Connecticut; <sup>2</sup>Department of Anesthesia and Intensive Care, Mansoura Faculty of Medicine, Mansoura, Egypt.

**Introduction**

The Middle East and Northern Africa (MENA) has the highest prevalence of diabetes as a world region, with Egypt making the top 10 ranking. The number of patients with diabetes is on the rise. Obesity is expected to remain relatively constant in the population. However, the diabetic population is on the rise even with prediction of lower prevalence of obesity. Would this inverse trend also be true for the rate of diabetic lower limb amputation decreasing while the diabetic population on the rise? Healthcare expenditure and utilization of healthcare services is on the rise and may contribute this to the lower incidences of diabetic lower limb amputation. This study will undertake this issue to decipher the relationship between diabetes and its devastating complication of lower limb amputation in Egypt using Mansoura University Hospital’s diabetic foot amputation statistics as a population sample.

**Methodology**

Estimation of diabetic population at risk of lower limb amputation in Mansoura, Egypt (aged 25+ years old) for the period of 2008-2013 was determined using percent (straight-line) growth rates equation of the general population. Prevalence of diabetic lower limb amputations in Mansoura, Egypt was estimated using recorded total (above and below knee) diabetic lower limb amputations in Mansoura University Hospital from 2009-2012. Based upon the estimated number of patients with diabetes, who are 25+ years of age, and the number of amputations in each year, the prevalence of diabetic foot amputation in Mansoura was estimated. Egypt’s overall prevalence of diabetic foot amputation was estimated as a larger scale of Mansoura’s prevalence of diabetes, taking in account the difference in diabetic population.

**Results**

Diabetic foot amputation prevalence is decreasing in Mansoura, Egypt (figure 1). On a larger scale, the total number of diabetic foot amputations in Egypt is decreasing. There was an overall slight increase from 2011-2012 (figure 2). However, funding has increased for diabetic foot clinics, community awareness programs, and overall healthcare for the same period.

**Conclusion**

Although diabetes is a major epidemic disease worldwide, and specifically in the MENA region, it is associated with health consequences and economic burden. Prevalence of diabetic foot amputation is decreasing, while major risk factors of diabetic foot amputation such as smoking, and is highly prevalent in the overall general population. However, there is increased funding specifically for diabetic foot care and healthcare in general. The exact cause needs to be investigated since studies have shown a high prevalence of other diabetic complications such as retinopathy.

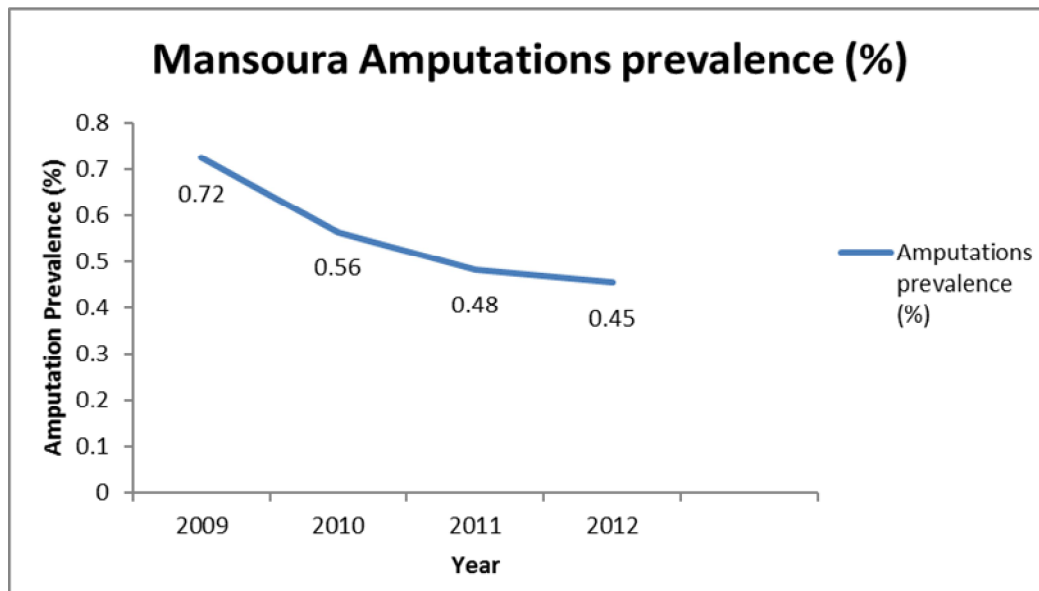


Figure 1. Lower limb diabetic amputation prevalence in Mansoura, Egypt. There is a trending decrease in lower limb diabetic amputation since 2009.

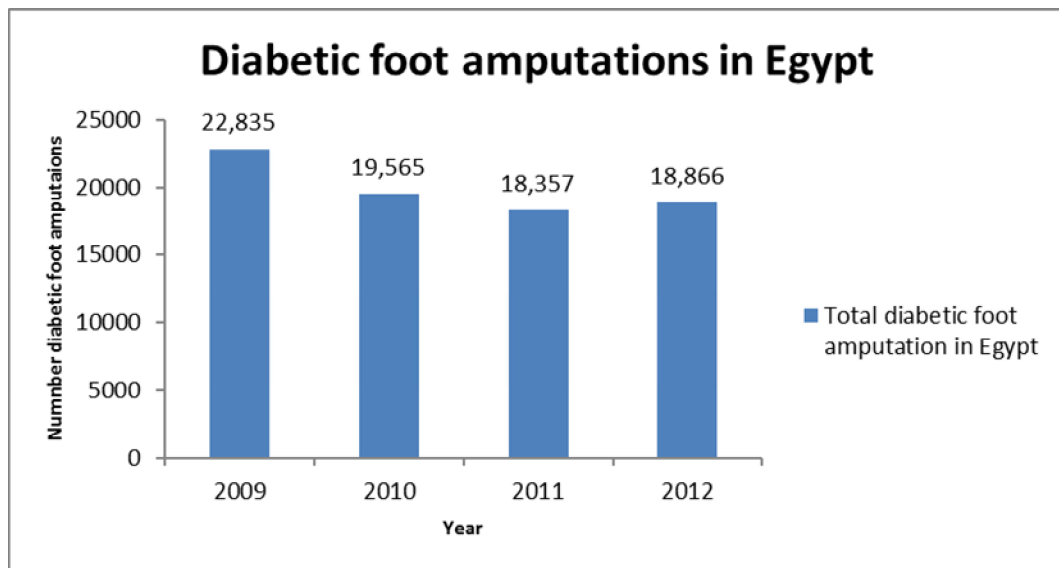


Figure 2. Estimated total number of diabetic foot amputations in Egypt from 2009-2012 based on Mansoura's diabetic foot amputation statistics. There is an overall decrease of diabetic foot amputations in Egypt with a slight increase from 2011-2012.

4:15 **Lessons Learned from Hypogastric Artery Ligation or Embolization in Obstetrics and Gynecology Patients:** Gautham Chitragari, MBBS, AFICA; Felix J. Schlosser, MD, PhD; Bauer E. Sumpio, MD, PhD; Section of Vascular Surgery, Department of Surgery, Yale University School of Medicine, New Haven, Connecticut.

**Purpose**

Embolization or ligation (EoL) of the hypogastric artery (HGA) commonly employed during aortoiliac interventions can result in complications such as buttock claudication, colonic ischemia or spinal cord ischemia. The anatomic and physiologic principles underlying these outcomes are not well defined. The aim of this study was to evaluate the outcomes of HGA EoL in obstetrics and gynecology (OBG) patients.

**Materials and Methods**

Databases were searched for articles containing data regarding HGA ligation in OBG patients. Based on the details of procedures and patients available in selected articles, data collected was categorized and evaluated for any significant differences in outcome.

**Results**

Seven hundred nine patients were included in the study. Overall ischemic complication rate was 13% (95/709). Of the 709 patients, 626 in which indication for EoL was reported, 60% (379/626) were obstetric causes, 32% (198/626) were malignancy related, and 8% (49/626) were due to non-malignant gynecological conditions. Complication rate was 3% (13/37) in obstetric patients, 38% (75/198) in patients with a malignancy, and 4% (2/49) in gynecological patients. Of the 125 patients in which demographic data was available, 34% (42/125) were ≤30 years old and 66% (83/125) were >30 years old. The complication rate was 5% (2/42) in patients aged ≤30 years and 11% (9/83) in patients >30 years; 12% (15/125) had unilateral embolization while 88% (110/125) had bilateral embolization and/or ligation; 62% (77/125) of patients had ligation, 33% (41/125) had embolization and 5% (7/125) had both. A unilateral procedure resulted in a complication rate of 13% (2/15) whereas, bilateral procedures resulted in an 8% (9/110) complication rate. Among patients with bilateral procedures, the complication rate was 7% (5/69) for EoL at the main trunk and 5% (2/39) for EoL of the anterior branch. Complication rate for ligation alone was 4% (3/77), embolization alone was 20% (8/41) and ligation plus embolization was 14% (1/7). The difference in outcomes between EoL for obstetric vs. malignancy related causes were statistically significant (95% confidence interval).

**Conclusion**

Patients with gynecologic malignancies undergoing EoL of the HGA have a higher risk of ischemic complications compared to obstetric patients. These studies may be useful in understanding the implications of HGA exclusion in patients undergoing endovascular aortoiliac procedures.

## Scientific Sessions

Friday, September 19, 2014 (Continued)

4:30 pm – 5:00 pm

Sixteenth Scientific Session

### **Normothermic Ex-Vivo Liver Perfusion as a Platform for the Assessment and Repair of Marginal Donor Organs**

*A Special Lecture*

**Introduction By:**

**Randall W. Franz, MD, FACS, RVT, FICA**

Assistant Professor of Surgery, Ohio State University School of Medicine, Columbus, Ohio; Associate Professor of Surgery, Ohio University School of Medicine, Columbus, Ohio; Chief, Vascular and Endovascular Surgery, Grant Medical Center, Columbus, Ohio; Treasurer and Member, Board of Directors, International College of Angiology; Chairman, Local Organizing Committee, 56<sup>th</sup> Annual World Congress, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

**Presentation By:**

**Sylvester M. Black, MD, PhD**

Assistant Professor of Surgery, Division of Transplantation, Department of Surgery, Ohio State University Wexner Medical Center, Columbus, Ohio.

***Questions and Answers with Audience Participation***

#### **Accreditation**

OhioHealth is accredited by the Ohio State Medical Association to provide continuing medical education (CME) for physicians. OhioHealth designates this live activity for a maximum of 8.5 AMA/PRA Category 1 credit(s)<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in this activity.

Saturday, September 20, 2014  
Seventeenth Scientific Session  
7:30 am – 8:00 am

**Professor Albert Senn Memorial Lecture  
Complex Vascular Procedures**

**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; Consulting Editor, *International Journal of Angiology*; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

**Presentation By:**

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

Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York, New York; Director, Long Island Vascular Center, Roslyn, New York.

**Background**

Vascular disease is progressive and often complicated with multiple lesions mandating complex procedures beyond the standard fashion to treat patients with complicated pathologies. In combination with evolving endovascular technologies, complex vascular procedures have been performed to save lives and limbs of these patients.

**Objectives**

Complex vascular procedures have been evaluated for outcome of the clinical benefits and analyzed for long-term results.

**Methods**

A retrospective review of a series of complex vascular procedures at different anatomic regions have been implemented for outcome review. Some specific techniques are described in detail along with their corresponding results.

**Results**

Peri-operative morbidities and mortalities have been reviewed. The different anatomic regions and their pathologies were able to be managed with complex procedures, and found to be beneficial with acceptable morbidity and mortality rates.

**Conclusion**

With proper pre-operative evaluation and patient selection, complex vascular procedures are safe with excellent results in those patients who face limb and/or life threatening vascular problems. Detailed results will be presented and discussed.

***Questions and Answers with Audience Participation***

## Scientific Sessions

Saturday, September 20, 2014 (Continued)

8:00 am – 8:30 am

Eighteenth Scientific Session

### Professor Kailash Prasad Oration Lecture Health Care: A Challenge for America!

#### Introduction By:

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

Professor, Clinical Surgery, Hofstra LIJ-Northshore School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein College of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology*; Founding Chairman, Asian Society for Vascular Surgery; Chairman, Scholarship Committee, and First Vice-President, Society of Honorary Police Surgeons, City of New York, New York, New York; Director, Long Island Vascular Center, Roslyn, New York.

#### Presentation By:

##### Sibu P. Saha, MD, MBA, FACS, FICA

Professor of Surgery and Bioengineering; Chief, Division of Cardiovascular and Thoracic Surgery; Frank C. Spender, MD Endowed Chair in Surgery; Chairman, Directors Council, Gill Heart Institute, University of Kentucky College of Medicine, Lexington, Kentucky; Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

#### Background

Healthcare costs in the United States have been rising since 1965. It is now a burden on our future economic growth.

#### Objectives

- Explore the history of U.S. healthcare.
- Analyze the financial perspective of healthcare in the U.S.
- Evaluate the quality of care in the U.S.
- Investigate healthcare access in the U.S.
- Suggest how we can improve our nation's healthcare system.

#### Methods

- Life experience as a practicing physician and involved in healthcare finance.
- Review of all contemporary reports on healthcare.

#### Results

The truth is, our nation's healthcare system is in critical condition. It's plagued by growing gaps in coverage, soaring costs, and below average outcomes for an industrialized nation on basic measures like error rates, infant mortality and life expectancy.

#### Conclusion

"Our single largest domestic policy challenge is healthcare."

#### Questions and Answers with Audience Participation

Scientific Sessions

Saturday, September 20, 2014 (Continued)

8:30 am – 8:45 am

**Professor John B. Chang Research Achievement Award**

**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; Consulting Editor, International Journal of Angiology; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

•

**Edward Ross, MD, FICA**

Clinical Professor of Cardiology, Indiana University School of Medicine, Indianapolis, Indiana; Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

CME accreditation is not provided for this Research Achievement Award.



Saturday, September 20, 2014 (Continued)

8:45 am – 11:00 am

Nineteenth Scientific Session

**Ongoing Controversies in Coronary Revascularization and Clinical Cardiology**

**Moderators:**

**Univ.-Prof. Dr. Otmar M. Pachinger, MD, FESC, FAHA, FICA**

Professor Emeritus, Distinguished Professor of Cardiology, Medical University of Innsbruck, Innsbruck, Austria; President, Austrian Heart Foundation; President and Member, Board of Directors, International College of Angiology; Senior Editor, *International Journal of Angiology*.

**Thomas F. Whayne, Jr., MD, PhD, FACC, FICA**

Professor of Medicine, Division of Cardiovascular Medicine, Gill Heart Institute, University of Kentucky, Lexington, Kentucky; Vice President, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

8:45 **Revascularization in Multi-vessel CAD—PCI vs. CABG for Non-Diabetic and Diabetic Patients:** Otmar M. Pachinger, MD, FESC, FAHA, FICA, Professor Emeritus, Distinguished Professor of Cardiology, Medical University of Innsbruck, Innsbruck, Austria; President, Austrian Heart Foundation; President and Member, Board of Directors, International College of Angiology; Senior Editor, *International Journal of Angiology*.

There are ongoing discussions and debate on the role of CABG and PCI for revascularization of multi-vessel CAD with significant ischemia. Diabetes mellitus represents an important risk modifier for these decisions.

As evident from the totality of evidence, no major difference in PCI and CABG has been documented in stable CAD. As detailed in the SYNTAX trial, long-term follow-up the complexity of CAD should be taken into account. The risk of PCI increases with the SYNTAX score, while the risk of CABG does not!

CABG is probably recommended in preference to PCI to improve survival rates in patients with multi-vessel CAD and diabetes mellitus, particularly if a LIMA graft can be anastomosed to the LAD artery (Freedom trial).

There are multiple goals of therapy in patients with stable CAD. Risk stratification is very important and *Heart Team Evaluation*.

Be prepared to hold PCI after diagnostic angiogram in certain pre-specified cases such as E VD with SYNTAX score over 33, unprotected LM, and diabetes.

PCI is less invasive, provides shorter hospitalization, lower risk of CVA, and better quality of life.

CABG offers more complete revascularization, fewer repeat revascularizations, and better protection against future events.

## Scientific Sessions

Saturday, September 20, 2014 (Continued)

9:15 **Twenty-Years of Research on Alcohol Septal Ablation for Hypertrophic Obstructive Cardiomyopathy:** Josef Veselka, MD, PhD, FESC, FICA, Professor of Medicine; Department of Cardiology, 2<sup>nd</sup> Medical School, Charles University and University Hospital Motol, Prague, Czech Republic; Vice President, Scientific Council, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

The first alcohol septal ablation (ASA) was performed in 1994. The concept of “therapeutic acute myocardial infarction” caused by application of concentrated alcohol into the coronary artery is not quite unique, since certain arrhythmias were treated in a similar way in the past. However, ASA has been widely discussed since its introduction, and rejected by many cardiologists for many years.. Sufficiently robust data from long-term follow-up of patients with hypertrophic obstructive cardiomyopathy treated with ASA were obtained in the past few years, demonstrating the safety and long-term efficacy of ASA. This presentation deals with a history of the above mentioned interventional procedure, its indications, technical aspects, safety, and long-term results.

9:45 **Lipid Core Reduction after PCI:** MUDr. Petr Háiek, MD, PhD; MUDr. Martin Horváth; Cyril Štěchovský; Josef Veselka, MD, PhD, FASCAI, FICA; Department of Cardiology, 2<sup>nd</sup> Medical School, Charles University and University Hospital, Prague, Czech Republic.

**Background**

Near-infrared spectroscopy (NIRS) imaging has been developed explicitly for detection of a lipid rich plaque (LRP), a believed to be clinically correlated to vulnerable atherosclerotic plaque. The hybrid catheter that which near-infrared spectroscopy and intravascular ultrasound (NIRS-IVUS) can assess plaque burden while simultaneously identifying LRP with NIRS. Therefore, it offers a unique possibility of combined information about chemical composition and morphology of the plaque.

**Objectives**

To determine a change in atherosclerotic lipid core (LC) after percutaneous coronary intervention (PCI).

**Methods**

We performed 12 PCIs with drug eluting stent implantation between May 2013 and January 2014 (3 for acute coronary syndrome, 9 for stable coronary artery disease). The procedures were followed by NIRS-IVUS. The extent of the lipid core was quantified by the lipid-core burden index (LCBI). The LCBI is the fraction of yellow pixels on the chemogram multiplied by 1,000. The region with the highest lipid burden is characterized by the maximal lipid core burden index (mxLCBI) per 4mm.

**Results**

Minimal luminal area increased after PCI ( $2.6 \pm 0.7\text{mm}^2$  vs.  $8.0 \pm 2.1\text{mm}^2$ ;  $P < 0.01$ ). Lipid cores in intervened segments were revealed in 10/12 patients (83%). The significant LC reduction was observed after PCI [ median (range) LCBI before vs. after PCI was 85.5 (61-263) vs. 11 (0-142), mxLCBI before vs. after PCI was 236 (61-482) vs. 52 (0-284);  $P < 0.01$  for LCBI and mxLCBI resp.]. Increase of cardiac troponin I after LC reduction was found in 1/12 (0.8%) patients.

**Conclusion**

Our results confirm significant LC reduction after PCI is probably due to the distal embolization of plaque. Thus, NIRS may allow lesion-specific risk stratification before PCI and optimization of PCI strategies for myocardial injury risk minimization.

10:30 **Update on Carotid Stents:** Josef Veselka, MD, PhD, FESC, FICA, Professor of Medicine; Department of Cardiology, 2<sup>nd</sup> Medical School, Charles University and University Hospital Motol, Prague, Czech Republic; Vice President, Scientific Council, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*; M. Špaček, MD; M. Horváth; C. Štěchovský; Petr Hájek, MD, PhD' Department of Cardiology, 2<sup>nd</sup> Medical School, Charles University and University Hospital Motol, Prague, Czech Republic.

Surgical carotid endarterectomy (CEA) was considered the gold standard in the therapy of significant carotid artery disease for more than five decades. This approach was based on results of several randomized trials demonstrating its effectiveness over that of the best medical therapy. In the past two decades, patients who are at high risk for surgery were offered carotid artery stenting (CAS) as a less invasive option, and subsequently CAS has become an interventional method considered in a select group of patients equivalent to CEA. On the other hand, we should bear in mind that outcomes of both CAS and CEA are highly operator- and volume-dependent and a simple stratifying method to prioritize CAS, CEA or medical therapy has not yet been proposed. Additionally, we have demonstrated the presence of double-vessel carotid disease, together with left ventricular dysfunction and renal failure, is an independent predictor of higher all-cause mortality in patients treated by CAS. Therefore, pre-procedural selection of patients is of a crucial importance. This presentation discusses the evidence for CAS and briefly presents technical aspects and innovations in CAS.

Saturday, September 20, 2014 (Continued)

11:00 am – 11:30 am

Twentieth Scientific Session

**Professor Hans J. Hachen Memorial Lecture  
Atherosclerosis Prevention by Pentoxifylline**

**Introduction By:**

**Pertti Aarnio, MD, PhD, FICA**

Professor of Surgery, University of Turku, Pori, Finland; Member, Board of Directors and Co-Chairperson, Scientific Committee, International College of Angiology; Treasurer, International College of Angiology; Senior Editor, *International Journal of Angiology*.

**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; Consulting Editor, *International Journal of Angiology*; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

**Background**

Cytokines and platelet activating factor (PAF) activate granulocytes and NADPH-oxidase in the endothelial cells to generate reactive oxygen species (ROS) which have been implicated the development of atherosclerosis. Pentoxifylline inhibits the generation, release, and the effects of cytokines. It also inhibits the production of PAF and its action on neutrophils

**Objectives**

The objectives were to investigate if pentoxifylline suppresses the development of atherosclerosis, and if this effect is associated with reduction in oxidative stress.

**Methods**

Studies were conducted on New Zealand white rabbits. Hypercholesterolemia was produced by feeding a 0.5% cholesterol diet. The extent of atherosclerosis in the aorta was measured. Oxidative stress was assessed in the serum and aorta by measuring malondialdehyde (MDA) and aortic tissue *chemiluminescence (AO-CL)*.

**Results**

A high cholesterol diet increased the serum levels of lipids, serum and aortic MDA, and produced atherosclerosis. Pentoxifylline had no effects on the serum lipids but suppressed the development of atherosclerosis by 38%. Suppression of atherosclerosis was associated with a reduction in serum MDA by 32%, aortic MDA by 37%, and AO-CL by 30%.

**Conclusion**

The data suggests that pentoxifylline suppresses hypercholesterolemia-induced atherosclerosis and this effect was associated with reduction in oxidative stress

**Questions and Answers with Audience Participation**

## Scientific Sessions

**Saturday, September 20, 2014 (Continued)**

11:30 am – 12:00 pm

Twenty-First Scientific Session

### **Professor John B. Chang Oration Lecture Autologous Stem Cells for Critical Limb Ischemia**

#### **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; Consulting Editor, *International Journal of Angiology*; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

#### **Presentation By:**

**Randall W. Franz, MD, FACS, RVT, FICA**

Associate Professor of Surgery, Ohio University School of Medicine, Columbus, Ohio; Adjunct Assistant Professor of Surgery, Ohio State University School of Medicine, Columbus, Ohio; Chief, Vascular and Endovascular Surgery; Medical Director, Grant Vascular and Vein Center, Columbus, Ohio; Chairman, Local Organizing Committee, 56<sup>th</sup> Annual World Congress, International College of Angiology; Treasurer and Member, Board of Directors, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

A prospective study evaluating dual intramuscular and intra-arterial autologous bone-marrow mononuclear cell (BM-MNC) implantation for the treatment of patients with severe peripheral arterial occlusive disease (PAD) in whom amputation was considered the only viable treatment options are presented. Ankle-brachial indices (ABIs), rest pain, and ulcer healing, were assessed at 3 months. Success was defined as success in ABI measurements; absence of rest pain; absence of ulcers; and absence of major limb amputations. This specific BM-MNC implantation technique is an effective limb salvage strategy for patients with severe PAD.

***Questions and Answers with Audience Participation***

Saturday, September 20, 2014 (Continued)

Twenty-Second Scientific Session

12:00 Noon – 12:30 pm

**Aortic Dissection Associated with Cardiac Tamponade and Coronary Malperfusion, Aortic Stenting and Vein Thrombosis in Chronic Kidney Disease**

**Moderators:**

**John A. Elefteriades, MD, FACS, 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; Co-Editor-in-Chief, *International Journal of Angiology*; Director, Aortic Institute at Yale-New Haven, Yale University School of Medicine, New Haven, Connecticut.

**Randall W. Franz, MD, FACS, RVT, FICA**

Associate Professor of Surgery, Ohio University School of Medicine, Columbus, Ohio; Adjunct Assistant Professor of Surgery, Ohio State University School of Medicine, Columbus, Ohio; Chief, Vascular and Endovascular Surgery; Medical Director, Grant Vascular and Vein Center, Columbus, Ohio; Chairman, Local Organizing Committee, 56<sup>th</sup> Annual World Congress, International College of Angiology; Treasurer and Member, Board of Directors, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

12:00 **Endovascular Aortic Stenting: Indonesia's Experience:** Iwan Dakota, MD, PhD, FICA, FESC, FACC, FSCAI, Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia; Regional Secretary, International College of Angiology; Member, Editorial Board, *International Journal of Angiology*.

Aortic disease has become increasingly prevalent over the past two decades. Aortic aneurysms, which involve both the thoraco-abdominal aorta (TAAA) and the abdominal aorta (AAA) could lead to a catastrophic condition if the aneurysm exceeds a certain size. Rupture of the aorta is a lethal condition, and a common occurrence if the aneurysm exceeds 5 cm in diameter. Management of aortic aneurysms including close monitoring of the aortic size, and intervention, such as open surgery is recommended if the size of the aneurysm exceeds 5.5 cm in diameter. Open surgery is still considered the "gold standard" as it has a long history of clinical application, and has demonstrated long-term results. However, in view of the high risk of surgery and mortality, it remains high in low load surgery for those surgeons who lack experience in aortic surgery. Another option to open surgery is needed. Over the past fifteen years, endovascular aortic repair (EVAR) is considered the viable option in high risk AAA patients. EVAR requires less operative time, less in-hospital stay, and less blood loss compared to classic open surgery. The endovascular approach is rapidly growing due to technological developments as well as highly experienced centers, it is more comfortable for the patient as well as the operator.

Aortic dissection, particularly thoracic aortic dissection is not uncommon. Over the past ten years, it is increasing in prevalence. Hence, it almost always presents with mimicking acute coronary syndrome, with presenting symptoms of chest or back pain in nature. The later, known as acute aortic syndrome, includes the "classic" acute aortic dissection, penetrating aortic ulcer (PAU), and intramural hematoma (IMH). Aortic dissection alone could be fatal if not well treated. Ascending aortic dissection is the most dangerous type of thoracic aortic dissection and is recommended for urgent open surgery. Descending aortic dissection can be managed conservatively, except for those with malperfusion syndrome, which requires the patient to undergo an endovascular approach called thoracic endovascular repair (TEVAR). Open surgery is not recommended for patients with a descending aorta, as it has a very high risk of morbidity and mortality. TEVAR is routinely performed in centers with well-trained operators.

Since 2004, the National Cardiovascular Center Harapan Kita Hospital in Jakarta, Indonesia, has routinely performed both EVAR and TEVAR to manage high risk patients indicated for surgery. At least 44 TEVAR procedures were performed to treat type B aortic dissection, and 36 EVAR for high risk AAA patients. A separated stent graft system implanted for both aortic dissection and AAA patients. Most of the procedures (90%) were performed utilizing the simple Seldinger Technique without arteriotomy, as the separated stent graft system comes with a relatively small delivery system. Some procedures required an arteriotomy, as some stent graft systems have a larger delivery system. Based upon mid-term follow-up, the success rate is relatively good (90%) and the length of stay is relatively short compared to open surgery (4.5 days). Mid-term outcomes revealed good results, with less than 5% mortality during the follow-up period, which were unrelated to the procedure. The total cost is still a problem, as it has a relatively high cost compared to surgery, but it should be considered to be covered by a universal coverage system. Long-term follow-up is still warranted to obtain long-term outcome results, including safety issues.

12:10 **Innominate Vein Thrombosis in Chronic Kidney Disease with Routine Hemodialysis:** Ismoyo Sunu, MD, PhD, FICA; Taofan Siddiq, MD, FICA; Suko Adiarto, MD, PhD, FICA; RWM Kaligis, MD, FICA; Hananto Andriantoro, MD, PhD, FICA; Iwan Dakota, MD, PhD, FICA; Vascular Division, Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

We are reporting on a 49-year old female patient previously diagnosed with Stage V chronic kidney disease (CKD), on routine hemodialysis with a permanent cimino implantation. She came to the National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia, with a primary complaint of a swollen right, 3 weeks prior to admission. Duplex ultrasound revealed a stenosis at the beginning of the right subclavian vein with the appearance of a thrombus. Percutaneous Luminal Angioplasty (PTA) with balloon was performed at the right subclavian vein in order to prevent vein rupture. However, residual stenosis still persisted. Eight months after PTA, the patient complained of a tingling sensation in the right arm. CT angiography revealed 90% stenosis from the opening of right jugular vein to IVC due to thrombus; flow improvement shown from right brachial vein to the SVC. Eight months later, the tingling sensation was felt once again accompanied by a swollen right arm and lethargy. ECG demonstrated AF slow ventricular response. A temporary pacemaker was implanted for 10 days prior to the AF regained normal ventricular response. Ten days after TPM procedure, the patient complained of right femoral swelling and pain near the insertion site of TPM wire. Duplex ultrasound revealed the appearance an AV fistula from the right proximal superficial femoral artery to the right common femoral vein and right inguinal pseudoaneurysm. AV fistula ligation was then performed. Post-ligation indicated no pseudoaneurysm; an AV fistula was found by Duplex ultrasound. At last, the second PTA was performed for multiple stenoses of the subclavian vein and revascularization to both sites of the upper extremity.



12:20 **Fatal and Rare Combination of Type A Aortic Dissection, Pericardial Tamponade and Coronary Malperfusion:** Dicky Aligheri, MD<sup>1</sup>; Sugisman, MD<sup>1</sup>; Tri Wisea, MD<sup>1</sup>; Suko Adiarso, MD, PhD, FICA<sup>2</sup>; Iwan Dakota, MD, PhD, FICA, FESC, FACC, FSCAI<sup>2</sup>; Departments of <sup>1</sup>Adult Cardiac and Vascular Surgery and <sup>2</sup>Vascular Medicine, National Heart and Vascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

The incidence of aortic dissection ranges from 5 to 30 cases per million people per year, depending upon the prevalence of risk factors in the study population. Although the disease is uncommon, its outcome is frequently fatal, and many patients with aortic dissection die before presentation to the hospital or prior to diagnosis. Acute type A aortic dissection can be complicated by pericardial tamponade and coronary malperfusion, and is associated with a significant surgical morbidity and mortality. The severity and consequences of a dissection are related to the physical characteristics and anatomic location of the tear as well as the underlying patient physiology.

Since the beginning of our aortic program, a total of 19 patients underwent emergency aortic surgery (most were type A aortic dissection). Three patients presented with type A aortic dissection, pericardial tamponade and coronary malperfusion, and underwent surgery at our center. Bentall procedure, hemi-arch replacement and one graft CABG was performed in two patients. One patient underwent Bentall procedure, hemi-arch replacement, one graft CABG and mitral valve repair. All cases were performed under deep hypothermic circulatory arrest and selective ante grade cerebral perfusion. There was one operative mortality. Post-operative results were uneventful. The patient's pre-operative co-morbidities and dissection-related complications significantly affected early and late survival and morbidity following the surgical treatment of acute type A aortic dissection.

### ***Questions and Answers with Audience Participation***

#### **Accreditation**

OhioHealth is accredited by the Ohio State Medical Association to provide continuing medical education (CME) for physicians. OhioHealth designates this live activity for a maximum of 4.50 AMA/PRA Category 1 credit(s)<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in this activity.

**12:30 pm—Congress Adjourns**



**OhioHealth**

**CME** *Continuing  
Medical  
Education*  
Quality Education  
for Your Future



**John B. Chang, MD, FICA, FACS, Program Chairman**  
Long Island Vascular Center  
1050 Northern Boulevard • Roslyn, New York 11576  
+516.484.3430 FAX: +516.484.3482  
Email: [jbchangmd@aol.com](mailto:jbchangmd@aol.com)

**International College of Angiology, Inc.**  
*Member, Council for International Organizations of Medical Sciences (CIOMS)*  
Executive Office: 161 Morin Drive • Jay, Vermont 05859  
+802.988.4065 FAX: +802.988.4066  
Email: [denisemrossignol@cs.com](mailto:denisemrossignol@cs.com)  
Website: <http://www.intlcollegeofangiology.org>

Printed in U.S.A.