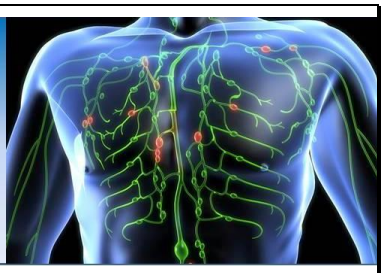
Slide 1

NEW WEBINAR

Massage and The Lymphatic System

- New Discoveries (going to rewrite textbooks)
- Immune System
- CNS
- Pathologies



Dr Bryan Hawley

Slide 2

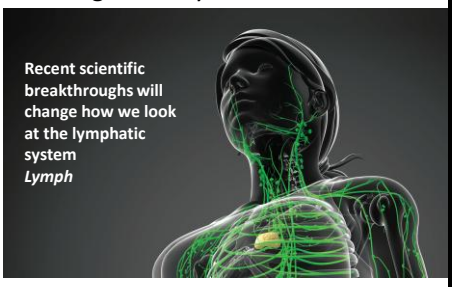
Housekeeping

- Questions
- Who am I
- Notes
- Recordings
- Certificates/Tests
- info@drbryanhawley.com
- Lets begin

Slide 3

"… Your patient had better save his life and money by passing you by as a failure, until you are by knowledge qualified to deal with the lymphatics."
A. T. Still, 189925

Massage & Bodywork Jan/Feb 2016



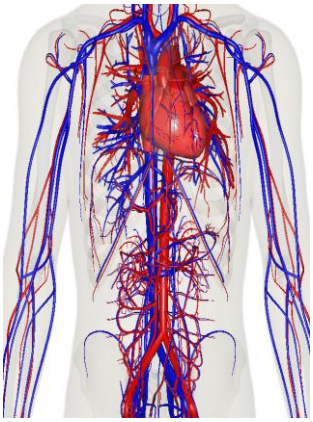
Slide 4

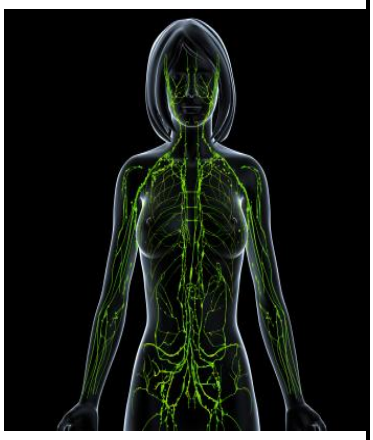
The healthy functioning of the lymphatic system can be hindered or stopped due to factors such as venous insufficiency, stress, chemical overload, (sport) injuries, age, lack of activity and increased consumption of food additives. These factors cause the circulation of fluids and, therefore, the cleansing process to slow down, which in turn compromises the health of the soft issue environment and opens the way to physical ailments.

"If the lymphatic system did not act to evacuate the excess protein from around the cells, the body would suffer massive edema, function complications and die within 24 to 48 hours" (Guyton, A.C, 1971)

Slide 5

The Lymphatic system acts like a Secondary Circulatory System





Slide 6

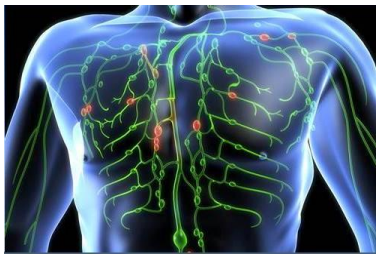
The spaces that open in the initial lymphatic are 4 to 6 times bigger than the spaces in the capillaries. Removal of protein is essential because they draw water to themselves, so excess protein in the interstitial spaces causes swelling or edema. The lymph vessels also collect dead cells, waste products, bacteria, viruses, inorganic substances, water and fats. *(Guyton and Hall, Human Physiology and Mechanisms of Disease, 6th edition, W.B Saunders Company, Philadelphia, 1997, page 139)*

Slide 7

Trivia

Lymphatic system is absent in:

-C.N.S.
-Cornea
-Superficial layer of skin
-bones
-alveoli of lung



Slide 8

The Lymphatic Rhythm

The lymphatic rhythm in humans was scientifically described by A. Engeset and W. Olszewski more than 30 years ago. The main vessels of the human lymphatic system (lymphatic collectors) present two or three layers of spiral muscles that have peristaltic (wavelike) contractions controlled by the autonomic nervous system.

Slide 9

LYMPH MOVEMENT

•It takes place with the help of:
•Contractile skeletal muscle
•Presence of valve
•Contraction of smooth muscle in large lymphatic trunk
•Pressure change in muscle during breathing

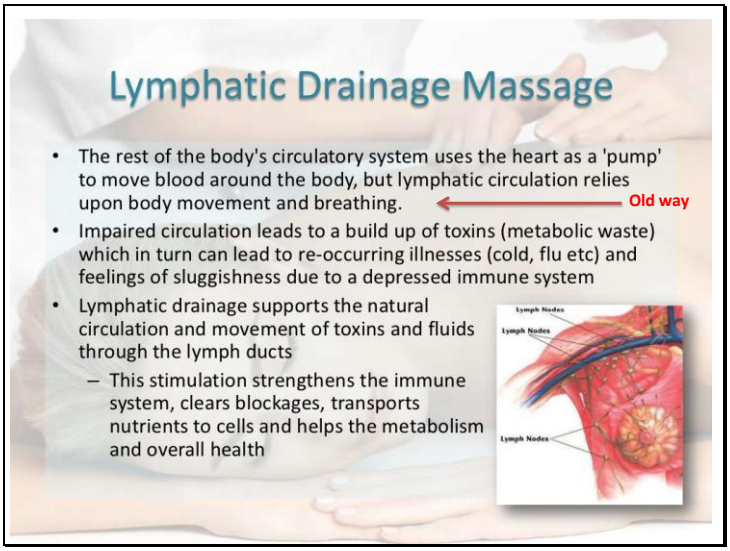
Rate of flow of lymph along the human thoracic duct is from 1-1.5ml/min.

Regulation of the lymph flow mainly depends upon :
•Interstitial pressure
•Atrial pulsation
•Intrathorasic pressure
•Muscular massage

Slide 10


Lymphatic Drainage Massage
• Lymphatic Drainage (also known as Manual Lymphatic Drainage or MLD) was developed in the early 1930s by Dr Emil Vodder.
– Originally used as a treatment for chronic sinusitis and other immune system disorder
– Now recognized as the primary tool in managing Lymphedema
• The lymphatic system acts as a second circulatory system comprising tissues and organs that produce, store and carry white blood cells.
– These blood cells help fight infection, disease, fungi, and kill cancerous cells

Slide 11


Lymphatic Drainage Massage
• The rest of the body's circulatory system uses the heart as a 'pump' to move blood around the body, but lymphatic circulation relies upon body movement and breathing.
Old way
• Impaired circulation leads to a build up of toxins (metabolic waste) which in turn can lead to re-occurring illnesses (cold, flu etc) and feelings of sluggishness due to a depressed immune system
• Lymphatic drainage supports the natural circulation and movement of toxins and fluids through the lymph ducts
– This stimulation strengthens the immune system, clears blockages, transports nutrients to cells and helps the metabolism and overall health
Lymph Nodes
Lymph Nodes
Lymph Nodes

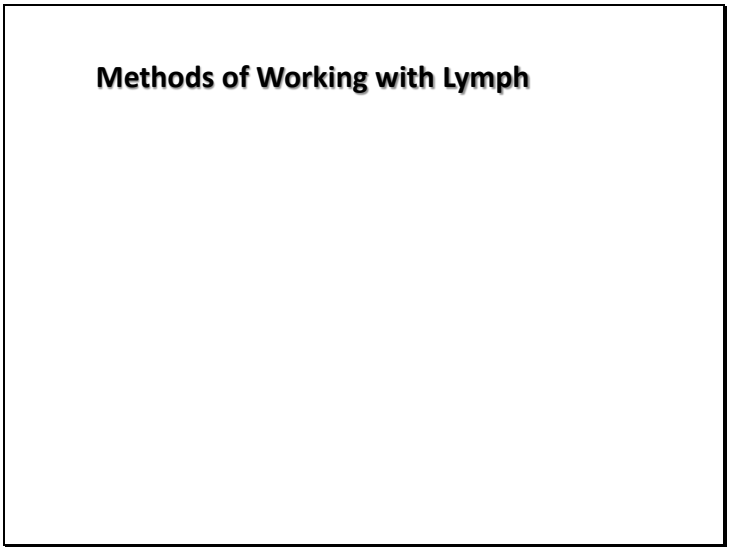
Slide 12

Contrary to what is sometimes taught, the lymphatic system is not a passive system only stimulated by respiration—and lymph doesn't need to be forcefully pushed with our fingers. The intrinsic motility of the lymph fluid is generated by the contraction of little muscular units located in the collector vessels between two valves. These contractile units, called "lymphangions" or "little lymphatic hearts," were discovered long ago, but were not recognized by the scientific community until recently.

The lymphangions are the "little hearts" in the lymph c
These are like little pacemakers that have an extensive i
from the autonomic nervous system.

These units comprise not only the layer of muscles, but all the layers in the contractile unit, including the external layer (externa), tunica media with the muscles, and tunica interna with the endothelium of the vessels

Slide 13



Slide 14

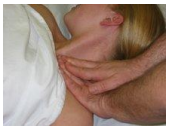
Bruno Chikly, MD, DO, and Alaya Chikly

https://chiklyinstitute.com/

Slide 15

Boris Prilutsky, MA, is the founding director and senior instructor at the Institute of Professional Practical Therapy in California

Ask your client to inhale and exhale. In the next inhalation, resist the expansion of the rib cage with moderate pressure. Release the pressure upon exhalation. With resistance of rib cage expansion, we cause the diaphragm muscles to work harder



Ask your client to turn her head to the right. Place your hand on the junction area of the thoracic duct and the brachiocephalic vein. Apply pressure (pumping action) upon exhalation.

Place your fist on the client's navel area. When the client exhales, perform pumping techniques under moderate pressure. Given the fact that the biggest lymphatic vessels including the cisterna chyli are on this level, this pumping effort is extremely important for acceleration of lymphatic fluid progression to the thoracic duct

Slide 16

https://youtu.be/U82tFFcTeX4
Face and Neck Drainage

https://youtu.be/hznLNVsspfo
Leg and Thigh

https://youtu.be/c_EbUBNOsYA?list=PLFE634ED27CAF1591
Belly and intestine

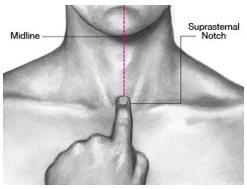
https://youtu.be/X1MD6k4LunY?list=PLFE634ED27CAF1591
Underarms and Chest

https://youtu.be/s0yBGJWBvNc?list=PLFE634ED27CAF1591
Back

Athena Jezik Austin

Slide 17

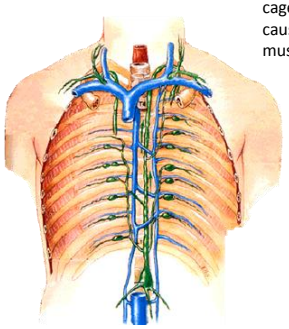
The VENUS ANGLE which is the primary place where all the head lymphatic fluids drains back into the body. It's located between the sternocleidomastoid muscle and in a small divot where the clavicle is. Take your ring finger and put it in the inside of the collar bone on each side. Lightly start to pump towards the heart once every 2 seconds several times.

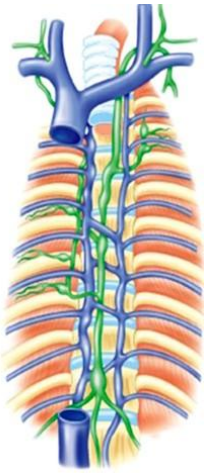


Slide 18

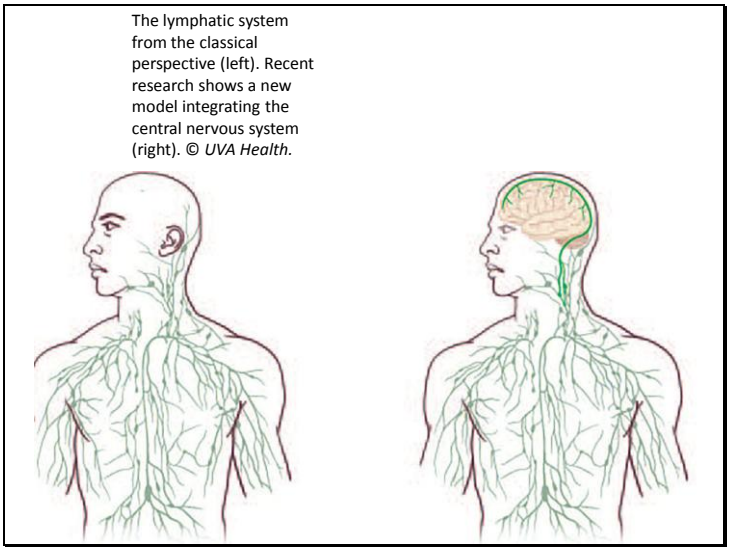
Thoracic Duct
Boris Prilutsky

With resistance of rib cage expansion, we cause the diaphragm muscles to work harder





Slide 19


The lymphatic system from the classical perspective (left). Recent research shows a new model integrating the central nervous system (right). © *UVA Health.*

Slide 20

This is a very slow clearance pathway in the CNS, present in most mammals, that facilitates the removal of CNS interstitial fluid, as well as waste products, including amyloid beta proteins that accumulate in pathologies such as Alzheimer's disease.

There is much new evidence describing the essential function of sleep in activating this glymphatic pathway that helps to maintain metabolic homeostasis. It seems that the clearance of potentially neurotoxic waste products is increased during sleep by the expansion of these extracellular spaces in the brain (a 60 percent increase in the glymphatic pathways).
An alternative important function of the glymphatic system may be to transport small lipid molecules in the CNS.

The name "glymphatic system" was coined by the Danish neuroscientist
Maiken Nedergaard in recognition of its dependence upon glial cells and the similarity of its functions to those of the peripheral lymphatic system

Slide 21

LYMPH IN THE BRAIN PROVEN

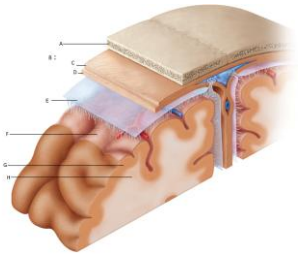
Still, glymphatic pathways are not lymphatic pathways. For decades, researchers tried to understand the mechanisms directing the entrance and exit of immune cells in the CNS and finally did so in 2015. Two separate teams of researchers, one team at the University of Virginia and one team at the University of Helsinki in Finland, independently found typical lymph vessels in the brain.

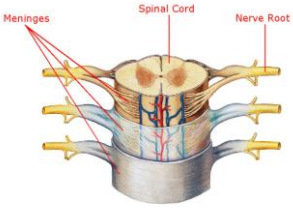
These vessels, which line the dural sinuses in the brain, carry lymphatic fluid (and immune cells) toward deep nodes of the neck (cervical lymph nodes). We can postulate that manual activation of the lymph flow in the numerous nodes of the neck may stimulate drainage of CNS fluid and waste products, and facilitate transportation of immune cells/ antigen-presenting cells to the nodes.

Great so what does this mean to us??

Slide 22

Until now, no lymph vessels had been officially found in the brain itself, so manual lymphatic techniques could not be appropriately applied to this region. With the discovery of lymph vessels in the meninges (the cover of the brain), manual lymphatic techniques can now be applied to the dura matter, the external and thicker layer of the brain.





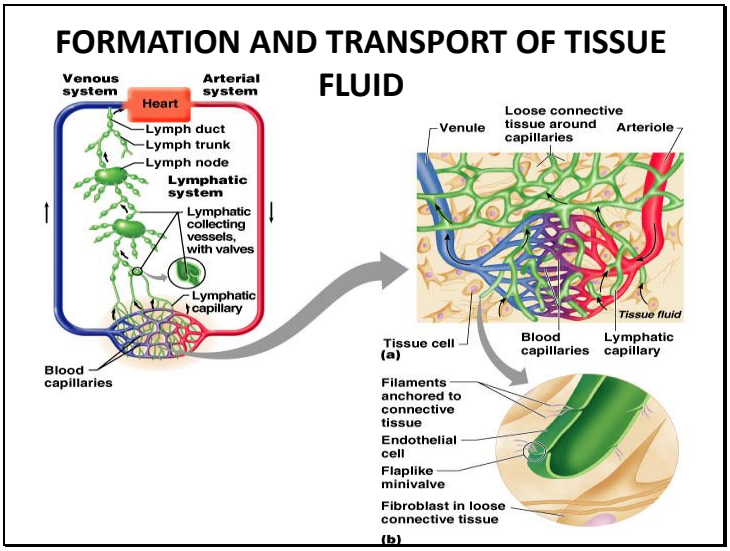
Bruno Chikly MD,DO,LMT
Lymph Drainage
Therapy (LDT) was developed to manually attune to the specific rhythm, the direction, the depth, and the quality of the lymph flow, consistent with these recent scientific discoveries.

Slide 23

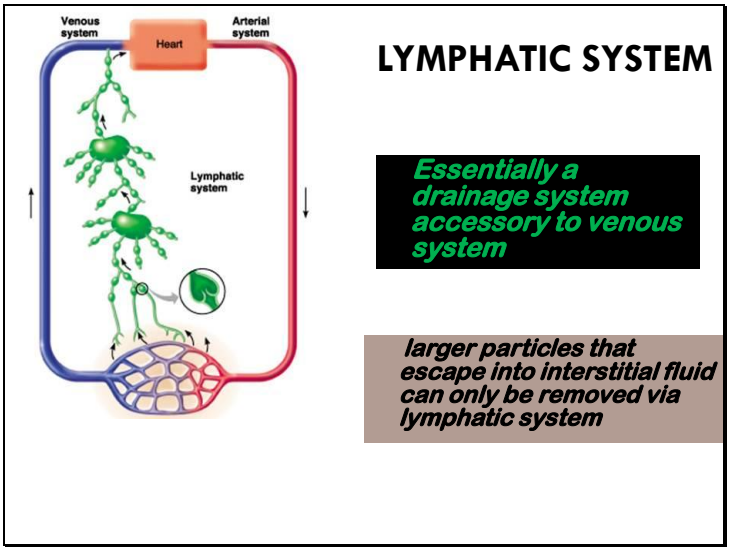
Ok Great sooooo What is LYMPH?

lymph
limf/
noun
1.
PHYSIOLOGY
a colorless fluid containing white blood cells, that bathes the tissues and drains the interstitial spaces through the lymphatic system back into the bloodstream.

Slide 24


FORMATION AND TRANSPORT OF TISSUE FLUID
Venous system
Arterial system
Heart
Lymph duct
Lymph trunk
Lymph node
Lymphatic system
Lymphatic collecting vessels, with valves
Lymphatic capillary
Blood capillaries
Venule
Loose connective tissue around capillaries
Arteriole
Tissue fluid
Tissue cell
Blood capillaries
Lymphatic capillary
(a)
Filaments anchored to connective tissue
Endothelial cell
Flaplike minivalve
Fibroblast in loose connective tissue
(b)

Slide 25


Venous system
Heart
Arterial system
Lymphatic system
LYMPHATIC SYSTEM
Essentially a drainage system accessory to venous system
larger particles that escape into interstitial fluid can only be removed via lymphatic system

Slide 26

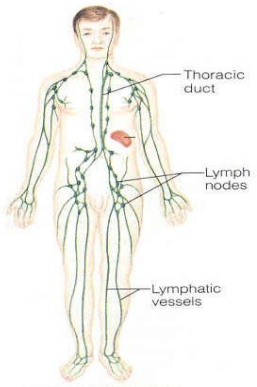
Functions of the Lymphatic System

- **Reabsorbs excess interstitial fluid:**
  - returns it to the venous circulation
  - maintain blood volume levels
  - prevent interstitial fluid levels from rising out of control.
- **Transport dietary lipids:**
  - transported through lacteals
  - drain into larger lymphatic vessels
  - eventually into the bloodstream.
- **lymphocyte development, and the immune response.**

Slide 27

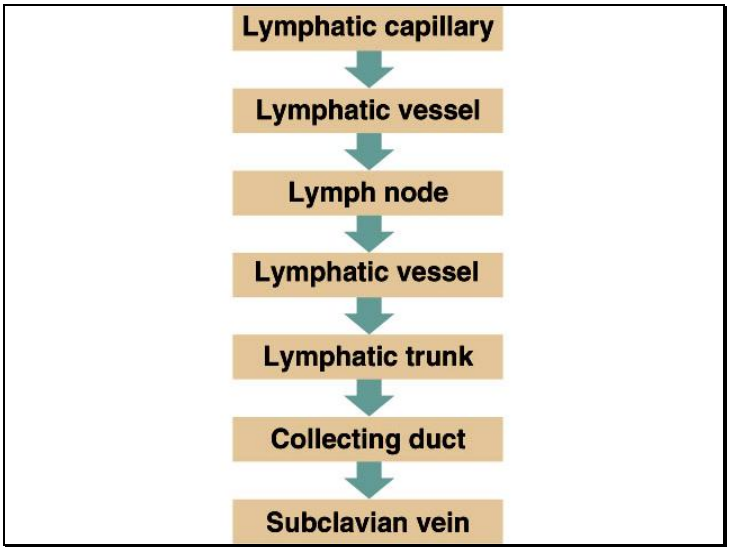
Components of the Lymphatic System

- Lymph
- Lymphatic Vessels
  - Lymphatic Capillaries
  - Lymphatic Vessels
  - Lymphatic Trunks
  - Lymphatic Ducts
- Lymphatic Organs
  - Thymus
  - Lymph Nodes
  - Spleen
  - Tonsils
- Lymphatic cells



Lymphatic system

Slide 28

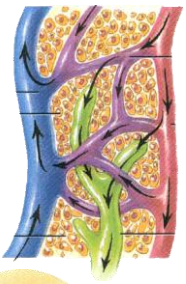

Lymphatic capillary
Lymphatic vessel
Lymph node
Lymphatic vessel
Lymphatic trunk
Collecting duct
Subclavian vein

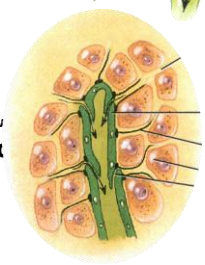
Slide 29

Lymphatic Capillaries

Features of structure:

- Blind end
- Single layer of overlapping endothelial cells
- More permeable than that of blood capillary
- Absent from avascular structures, brain, spinal cord splenic pulp and bone marrow





Slide 30

Lymphatic Capillaries – Lacteals

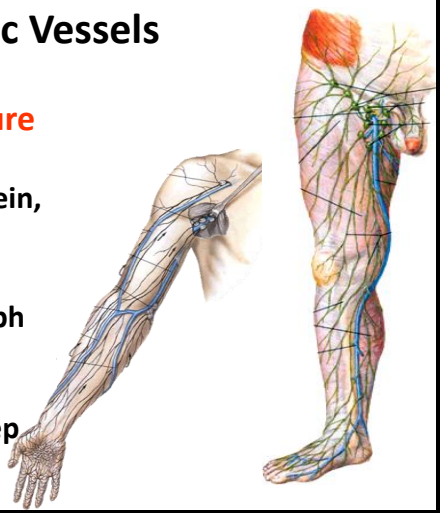
- **The small intestine contains special types of lymphatic capillaries called lacteals.**
- **Lacteals pick up not only interstitial fluid, but also dietary lipids and lipid-soluble vitamins.**
- ***So what happens if their clogged?***
- **The lymph of this area has a milky color due to the lipid and is also called chyle.**

Slide 31

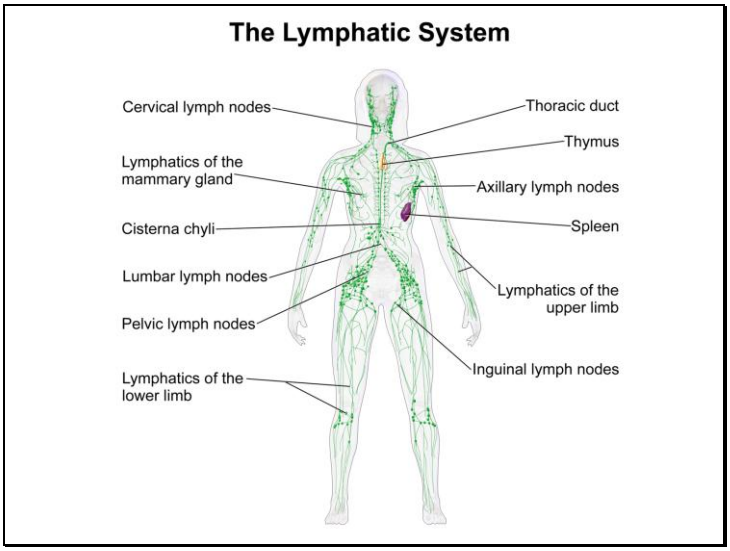
Lymphatic Vessels

Features of structure

- Three layered wall but thinner than vein,
- More numerous valves than in vein
- Interposed by lymph nodes at intervals
- Arranged in superficial and deep sets

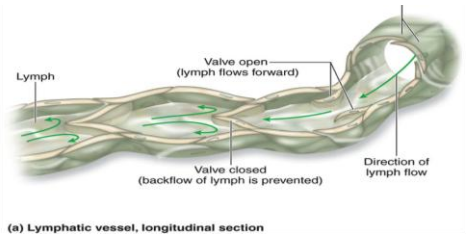


Slide 32


The Lymphatic System
Cervical lymph nodes
Thoracic duct
Thymus
Lymphatics of the mammary gland
Axillary lymph nodes
Cisterna chyli
Spleen
Lumbar lymph nodes
Lymphatics of the upper limb
Pelvic lymph nodes
Inguinal lymph nodes
Lymphatics of the lower limb

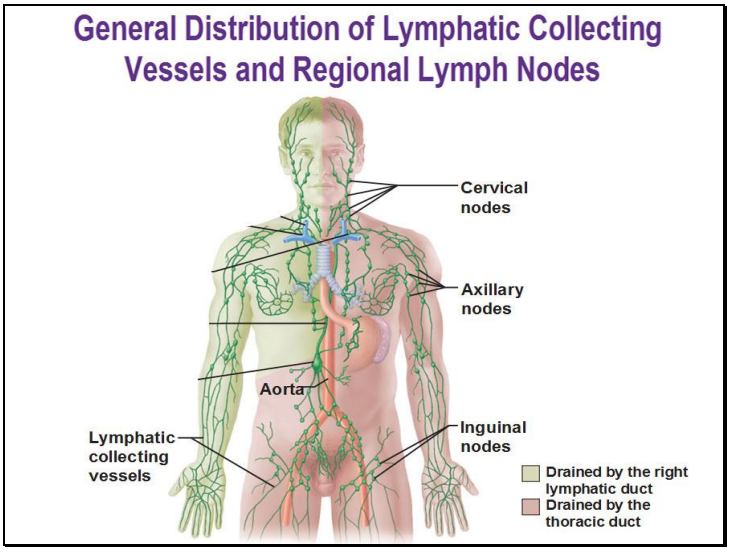
Slide 33

When the lymphatic sacs are filled, lymph enters the lymphatic vessels. These vessels also have large pores and carry a small quantity of smooth muscles. The walls of lymphatic vessels contain valves, directing the flow of lymph one way only (toward the heart). Along the path of the lymphatic vessels are lymphatic nodes. When the fluid reaches these nodes, infections, alien proteins, and other foreign materials are destroyed. The drained lymph then continues its flow. Most of the lymphatic fluid reenters the circulation via the thoracic duct (a common drainage duct). Through this duct the lymph enters the brachiocephalic vein. The right lymphatic duct drains lymph only from the right upper extremity and half of the face and head.

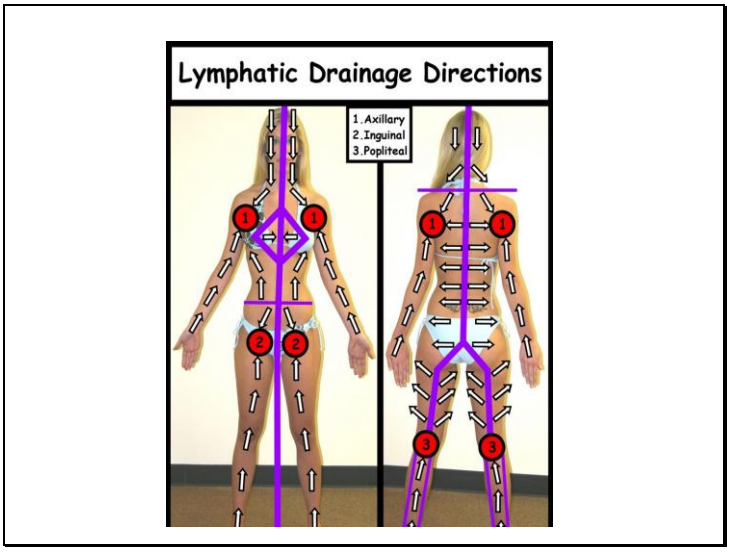


(a) Lymphatic vessel, longitudinal section

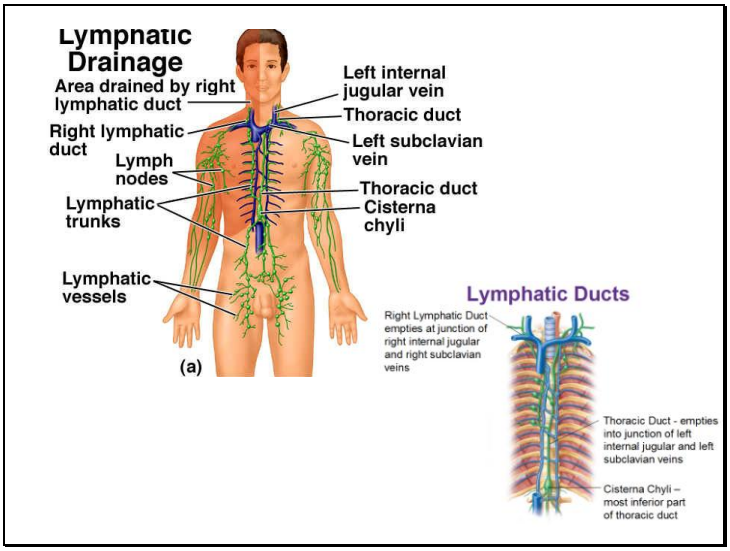
Slide 34


General Distribution of Lymphatic Collecting Vessels and Regional Lymph Nodes
Cervical nodes
Axillary nodes
Aorta
Inguinal nodes
Lymphatic collecting vessels
Drained by the right lymphatic duct
Drained by the thoracic duct

Slide 35


Lymphatic Drainage Directions
1..Axillary
2..Inguinal
3.Popliteal
1
1
2
2
1
1
3
3

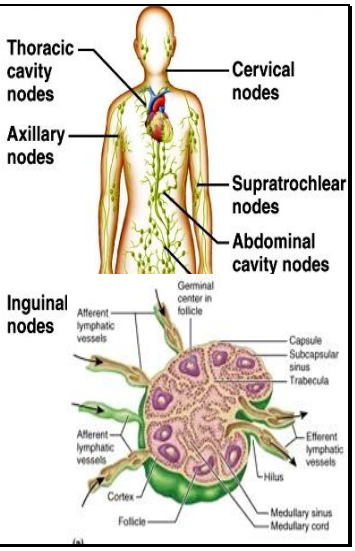
Slide 36


Lymphatic Drainage
Area drained by right lymphatic duct
Right lymphatic duct
Lymph nodes
Lymphatic trunks
Lymphatic vessels
(a)
Left internal jugular vein
Thoracic duct
Left subclavian vein
Thoracic duct
Cisterna chyli
Lymphatic Ducts
Right Lymphatic Duct empties at junction of right internal jugular and right subclavian veins
Thoracic Duct - empties into junction of left internal jugular and left subclavian veins
Cisterna Chyli – most inferior part of thoracic duct

Slide 37

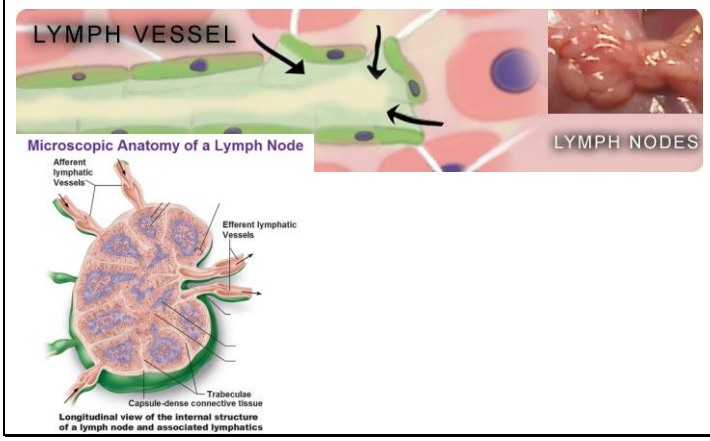
Lymph Nodes

- Small, round or oval
- located along the pathways of lymph vessels.
- length from 1 - 25 millimeters
- Typically found in clusters
- receive lymph from many body regions.
- Lymph nodes are also found individually throughout the body tissues.



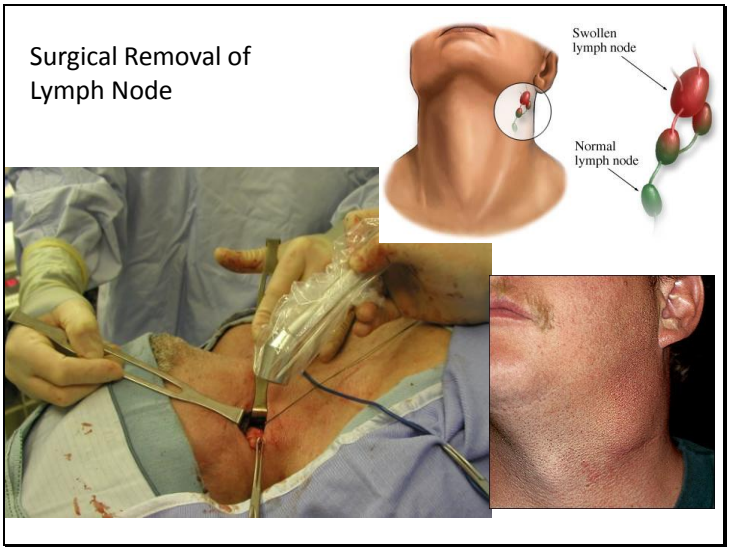
Slide 38

LYMPH NODES:
Eventually, all lymph vessels lead to lymph nodes. Lymph nodes can be as small as the head of a pin, or as big as an olive. There are 400-700 lymph nodes in the body, half of which are located in the abdomen, and many are in the neck.



Slide 39

Surgical Removal of Lymph Node



Slide 40

Lymph Vessels

- Lymphatic **capillaries** –
- Lymphatic **collecting vessels**
- Lymphatic **trunks** –
- Lymphatic **ducts** –

Slide 41

Lymphatic Cells

- Also called lymphoid cells.
- Located in both the lymphatic system and the cardiovascular system.
- Work together to elicit an immune response.
- Types of lymphatic cells are:
  - macrophages
  - epithelial cells
  - dendritic cells
  - lymphocytes

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LYMPHATIC ORGANS

Primary organs

- Red bone marrow
- Thymus gland

Secondary organs

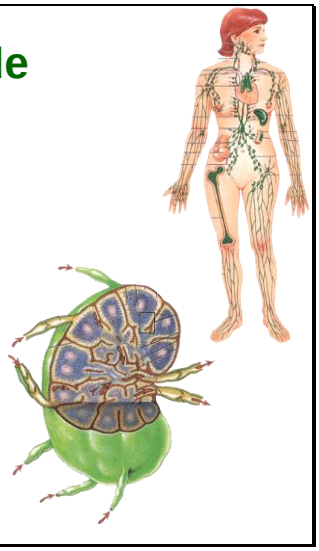
- Lymph nodes
- Lymph nodules
- Spleen

Slide 43

Lymph node

Features

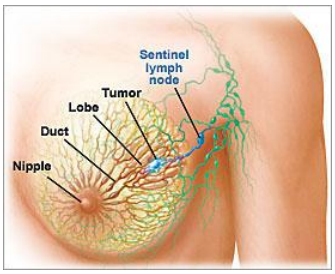
- Bean-shaped bodies
- With afferent vessels (entering at the periphery) and efferent lymph vessels(emerging at the hilus)
- Arranged in groups, along the blood vessels or the flexural side of the joint
- Divided into superficial and deep groups



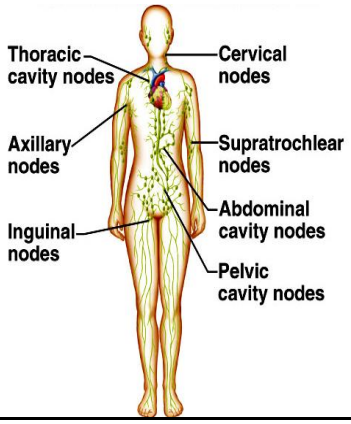
Slide 44

Regional Lymph drainage

44



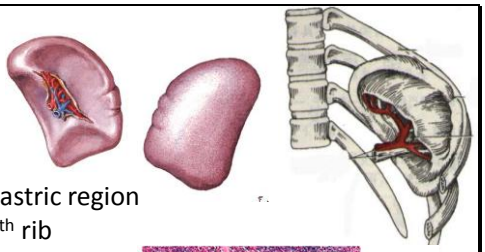
- **Regional Lymph Node** is the lymph node where the lymph of the organ or part of the body drainage to firstly



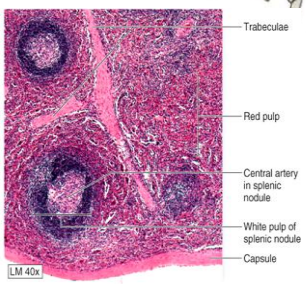
Slide 45

Spleen

45



- Location
  - Upper Left epigastric region
  - between 9th-11th rib
  - in line of 10th rib
- Largest lymphatic organ in the body.
- Can vary considerably in size and weight



- Function

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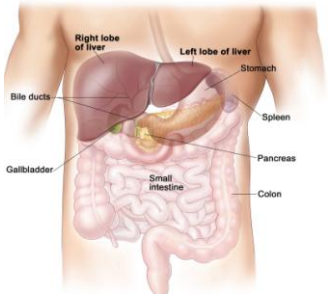
Spleen Function

The **spleen** plays multiple supporting roles in the body. It acts as a filter for blood as part of the immune system. Old red blood cells are recycled in the **spleen**, and platelets and white blood cells are stored there. The **spleen** also helps fight certain kinds of bacteria that cause pneumonia and meningitis.

The spleen is composed of the **red pulp** and **white pulp**. The white pulp produces and grows immune cells as well as blood cells. On the other hand, the red pulp is responsible for purifying the blood and removing dead or old blood cells.



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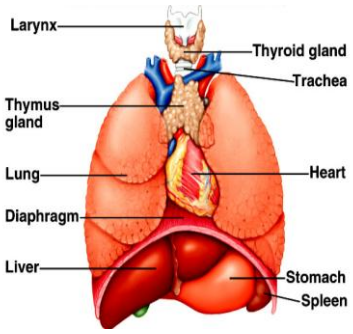
THYMUS

The **thymus** is a specialized primary lymphoid organ of the immune system.
Within the thymus, T cells or T lymphocytes mature. T cells are critical to the adaptive immune system where the body adapts specifically to foreign invaders



The thymus is largest and most active during the neonatal and pre-adolescent periods. By the early teens, the thymus begins to atrophy and thymic stroma is mostly replaced by adipose (fat) tissue. Nevertheless, residual T lymphopoiesis continues throughout adult life.

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Lymphatic Nodules

- **Oval clusters of lymphatic cells with some extracellular matrix that are not surrounded by a connective tissue capsule.**
- Filter and attack antigens.
- In some areas of the body, many lymphatic nodules group together to form larger structures.
  - mucosa-associated lymphatic tissue (MALT) or tonsils
  - very prominent in the mucosa of the small intestine, primarily in the ileum
    - **Peyer patches**
  - also present in the appendix

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MALT

- MALT – mucosa-associated lymphatic tissue:
  - Peyer's patches, tonsils, and the appendix (digestive tract)
  - Lymphoid nodules in the walls of the bronchi (respiratory tract)
- MALT protects the digestive and respiratory systems from foreign matter

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Tonsils

- clusters of lymphatic cells and extracellular matrix not completely surrounded by a connective tissue capsule.
- Consist of multiple germinal centers and crypts

- Several groups of tonsils form a protective ring around the pharynx.
  - pharyngeal tonsils (or adenoids) in nasopharynx
  - palatine tonsils in oral cavity
  - lingual tonsils along posterior one-third of the tongue

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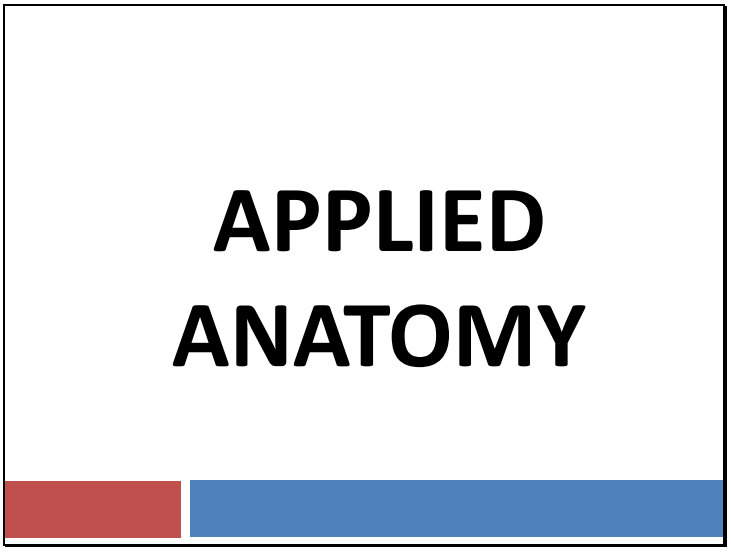

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Up to 25 percent of breast cancer patients whose surgery includes removal of lymph nodes in the area of the armpit eventually develop lymphedema.

The condition can also occur in the legs or other parts of the body if lymph nodes are removed in the course of other types of surgery - for melanoma, colon, prostate or bladder cancer, for example - or are damaged by radiation treatment, infection or trauma

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LYMPHATITIS

Inflammation of the lymph vessels

Commonest cause bacteria called streptococcus pyogenes(most common).

- **Lymph vessels appear as red streaks through the skin**

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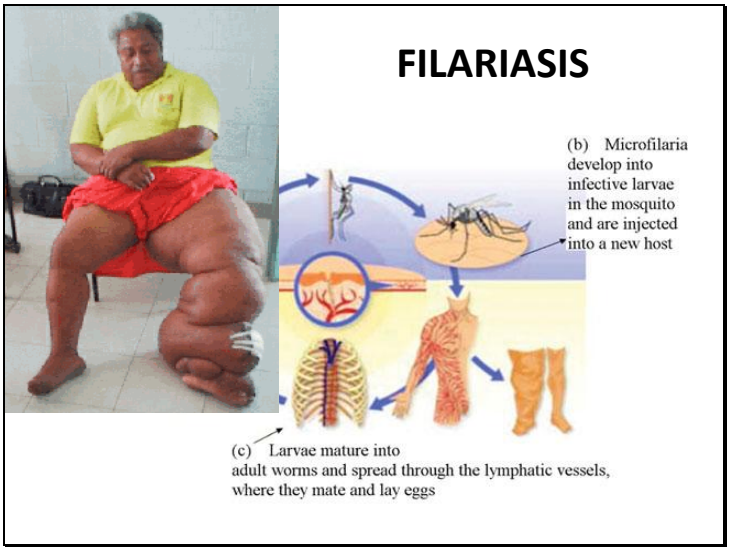
FILARIASIS
(b) Microfilaria develop into infective larvae in the mosquito and are injected into a new host
(c) Larvae mature into adult worms and spread through the lymphatic vessels, where they mate and lay eggs

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LYMPHEDEMA

- Occurs due to accumulation of lymphatic fluid in the interstitial tissue
- Sometimes can be appreciated after wearing tight clothing or jewellary on affected limb

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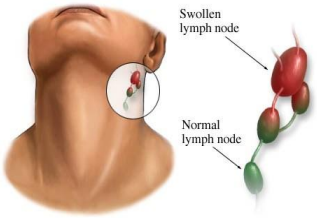
LYMPHADENOPATHY

- Means a disease of the lymph nodes
- Lymph nodes become swollen/ enlarged and may be painful to touch



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LYMPHOMAS

- **Cancers originating either from the lymphocytes in the lymph nodes or the lymphatic tissue in organs**
- **Risk factors -- HIV, HEPATITIS, EBV infections**

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TONSILLITIS

- **Infection of the pharyngeal tonsils**
- **Tonsils are swollen,**
- **Fever and pain during swallowing usually present**
- **Treatment – surgical removal of tonsils (TONSILLECTOMY)**

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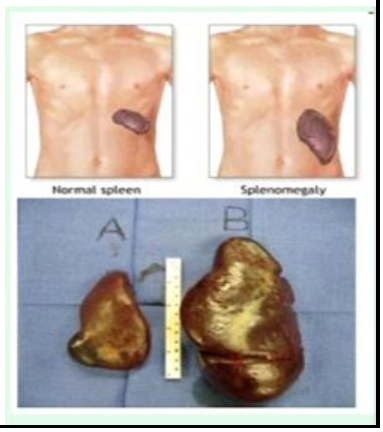
SPLENOMEGALY

- **Enlarged Spleen**
- **Various causes**



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Contraindications of Lymphatic Drainage

Contraindications happen when an increase in lymph flow would be detrimental. Contraindications can either be absolute or relative. The physician can override relative contraindications but the absolute contraindication cannot be overridden. if he or she finds good reason

Absolute Contraindications :

Acute inflammation - caused by bacteria, viruses and poisons are contraindicated. Tissues will be red, hot, and painful with congestion accompanied by fever. Lymphatic drainage will push these substances into the lymph channels before the body has a chance to eliminate them. This way one can spread the toxic substances throughout the body. It is best to wait a few days until the condition is not acute and the body has had a chance to clean up the area.

Malignant tumors – there is a fear of spreading the cancer.

Thrombosis – can lead to free floating blood clots in the circulatory system.

Major heart problems – if the heart is not fully functioning, edema can be lymphodynamic due to a lack of venous return. Pumping more fluid in the heart it may stress it more than the actual condition.

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Relative Indications or Precautions:

Kidney problems – check with the physician before treating.

Bronchial asthma – this can stimulate the vagus nerve bringing on an attack.

Thyroid problems – no treatment around the throat.

Medications – fear of increasing the dosage by draining the interstitial spaces.

Chemotherapy – fear of increasing the dosage by draining the interstitial spaces.

First three months of pregnancy – fear of miscarriage.

Removed spleen – recommend shorter session first.

Menstruation – MLD can increase the flow.

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CAUSES OF LYMPHADENOPATHY

A.Viral
-Infectious mononucleosis
-Infectious hepatitis
-Herpes simplex
-Rubella
-Measle
-Hiv

B.Bacterial
-Cat scratch disease
-Brucellosis
-Tuberculosis
-Atypical mycobacterial infection
-Primary and secondary syphilis
-Diptheria

C. Fungal
-Histoplasmosis
-Coccidioidomycosis

D.Parasitic
-Toxoplasmosis
-Filiriasis

E.Chlamydial
-Lymphogranuloma venerum
– Trachoma

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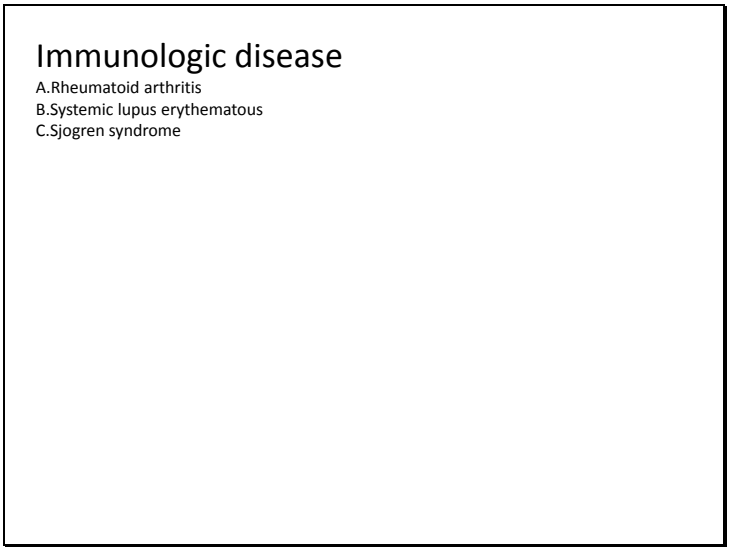
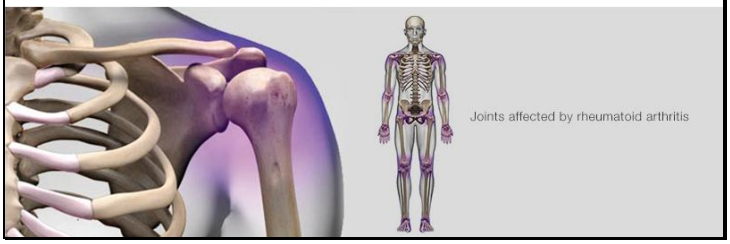

Immunologic disease
A.Rheumatoid arthritis
B.Systemic lupus erythematous
C.Sjogren syndrome

Slide 64

What is rheumatoid arthritis (RA)?

You've probably asked, "What is rheumatoid arthritis?" and "How does rheumatoid arthritis affect me?" RA is a chronic disease that causes pain, stiffness, swelling, and loss of function in the joints. It occurs when your immune system, the system that protects your body from outside harm, mistakenly starts attacking healthy tissue. This causes inflammation that leads to swelling in the joints, making them progressively less and less mobile. If not managed properly, over time, RA can cause joint damage—and can even result in permanent joint destruction.



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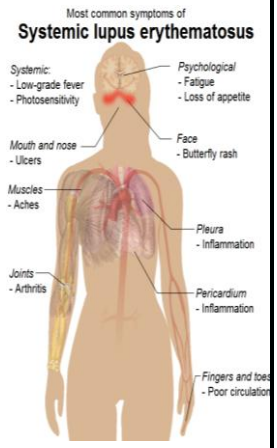
Systemic lupus erythematous, SLE

Lupus is one of many disorders of the immune system known as autoimmune diseases. In autoimmune diseases, the immune system turns against parts of the body it is designed to protect. This leads to inflammation and damage to various body tissues. Lupus can affect many parts of the body, including the joints, skin, kidneys, heart, lungs, blood vessels, and brain. Although people with the disease may have many different symptoms, some of the most common ones include extreme fatigue, painful or swollen
joints (arthritis), unexplained fever, skin rashes, and kidney problems.



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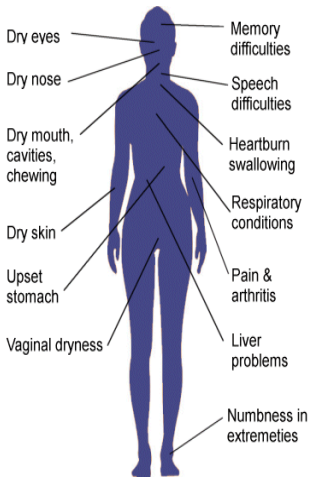
Sjögren's is a chronic autoimmune disease in which a person's white blood cells attack their moisture-producing glands. Today, as many as 4 million Americans are living with this disease.
Although the primary symptoms are dry eyes, dry mouth, fatigue and joint pain, Sjögren's also causes serious complications throughout the entire body

Sjögren's also cause dysfunction of organs such as the kidneys, gastrointestinal system, blood vessels, lungs, liver, pancreas, and the central nervous system. Patients also have a higher risk of developing lymphoma. Today, as many as four million Americans are living with this disease.



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Ethics Red Flag Warning

When working on a patient's breast, or groin regions it is important for the therapist to be aware of the trust the client has given him or her. A therapist must respect and honor this trust at all times. Proper draping should always be used to provide comfort and security to the client. In addition, prior to beginning the treatment session, the client should sign a release form giving the therapist permission for breast or groin work and state that they have discussed the areas that will and will not be worked.

This form should describe why and how this technique is applied, as well as explain the comfort level of touch between the therapist and client. It also should state a client can stop the massage for any reason at any time during the treatment process. This decision will be honored, no questions asked.

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Housekeeping

- Questions
- Notes
- Recordings
- Certificates/Tests
- info@drbryanhawley.com
- Lets begin