

MANAGEMENT OF LYMPHEDEMA

THE SWELLING CONNECTION
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OBJECTIVES

- Understand Lymph System:
Anatomy/Physiology
- Differentiate between Primary and Secondary lymphedema and outcomes
- Understand basic compression bandaging
- Choose appropriate compression

DEFINITION OF LYMPHEDEMA

- Swelling of a body part, usually the extremities. It causes chronic inflammation and reactive fibrosis. Can occur in the face, neck, abdomen or genitals.
- Lymphedema is the result of abnormal accumulation of protein rich fluid

Primary Lymphedema

- Primary lymphedema is due to a congenital deformity of the lymphatic system.
- Accumulation of protein rich fluid in the interstitium due to a low volume or mechanic insufficiency of the lymphatic system.
- 87% females
- 13% males

Primary Lymphedema can:

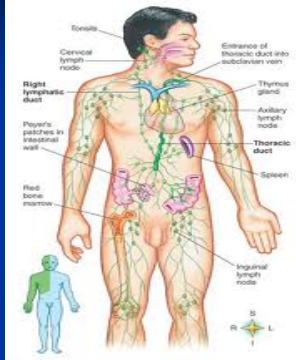
- Present at birth =Lymphedema congenita
- Develop in childhood=Lymphedema Praecox
- Develop in Adulthood=Lymphedema Tarda



Secondary Lymphedema

- Secondary lymphedema usually results from a trauma to the lymphatic system
 - Surgery
 - Breast, gynecological, head/neck, prostate, testicular, bladder, colon
 - Radiation therapy
 - Traumatic injury
 - Spinal cord injury
 - Stroke
 - Tumor/cancer involvement
 - Chronic venous insufficiency

Lymphatic System



ANATOMY OF LYMPHATIC SYSTEM

- Lymph nodes 600-900
- Lymphatic ducts-thoracic duct largest originating at the cisterna chyli
- Organs- spleen, tonsils, appendix, bone marrow
- Lymphatics- lymph capillaries, precollectors, angions, trunks and ducts

LYMPHATIC SYSTEM

- Parallels with the venous system
- Not a closed system
- Begins in the periphery and ends in the veins by the heart
- No central pump
- No clear pathways- Lymph nodes along the way acting as “filter stations”

ROLE OF LYMPHATIC SYSTEM

- Responsible for 10% of fluid return
- Venules responsible for 90%
- Responsible for absorption of protein molecules
- Macrophage break down into protein molecules
- Carries away and removes bacteria

HOW DOES LYMPH MOVE

- Muscular contraction causing change in tissue pressure (bandaging)
- Stretch stimulus (Kinesiotape and MLD)
- Changes in intra-thoracic pressure
 - Diaphragmatic breathing

INTRINSIC DRIVING FORCE

- NO PUMP
- 7 times per minute
- Stretch receptors

EXTRINSIC FORCES

- Arterial pulsations
- Peristalsis
- Respiration
- Exercise
- MLD or CDT

DIFFERENTIAL DIAGNOSIS

- LYMPHEDEMA
- LIPIDEMA
- CHRONIC VENOUS INSUFFICIENCY
- ACUTE DVT
- CARDIAC EDEMA, CHF
- COMBINATION

LYMPHEDEMA CHARACTERISTICS

- Slow onset, progressive
- Pitting (early stages only)
- Starts distally
- Squaring of toes and stemmer's sign
- Dorsum of foot "buffalo hump"
- Loss of ankle contour
- Asymmetric if bilateral

Lymphedema continued

- Cellulitis is common
- Rarely painful
- Discomfort is common
 - Heaviness or Achiness
- Skin Changes
 - Hyperkeratosis, Papillomas
- Ulcerations unusual
- Lymphorrhea

Lipedema

- Usual onset at puberty
- Bilateral
 - Symetrical swelling from iliac crest to ankles
- Dorsum of feet never involved
- Stemmer's sign negative
- Little or no pitting
- No cellulitis
- Painful to palpation, bruises easily

Venous Edema

- More swelling in calf than ankle
- Minimal pitting
- Brawny – thick, dry, leathery
- Hemosiderin staining
- Fibrosis of sub-cutaneous tissue
- Ulcerations

ACUTE DEEP VEIN THROMBOSIS

- Sudden onset
- Painful
- Cyanosis
- Positive Homan's sign

CARDIAC EDEMA

- Greatest distally
- Always bilateral
- Pitting
- Complete resolution with elevation
- No pain
- Buffalo hump on foot

MALIGNANT LYMPHEDEMA

- Pain, paresthesia, paralysis
- Proximal onset
- Rapid development, continuous progression
- Swelling of nodules in supraclavicular fossa
- Ulcers, non healing open wounds

PHYSICAL EXAM

- Pace of onset
- Pitting
- Distal vs proximal
- Cellulitis
- Pain
- Discomfort
- Skin Changes

What are treatment options?

- Medications:
 - Antibiotics-decrease infection risk
 - Diuretics-decrease interstitial fluid
- Surgical: Not curative
 - Excisional:
 - Debulking of the area to remove excess tissue to decrease volume
 - Lymphatic transplant
 - Lymphatic bypass
 - Physiological
 - Drainage of the area via lymph to lymph or lymph to venous anastomosis

COMPLETE DECONGESTIVE THERAPY

- Manual lymphatic Drainage
 - Know your therapist
- Compression Bandaging
- Exercise
- Skin Care and Nail care
- Instruction in self-care

CDT TREATMENT GOALS

- Treatment Goals
 - Improve cosmesis
 - Preserve skin integrity
 - Soften subcutaneous tissues
 - Avoid infection or lymphangitis
 - Decrease limb size
 - Improve mobility

MANUAL LYMPHATIC DRAINAGE

- Gentle manual treatment aimed at redirecting the lymphatic flow to a healthy region
- Increases lymphatic uptake
- Breaks up fibrotic areas
- Increases frequency of lymphatic uptake

Compressive Bandaging

- Minimally elastic bandages applied to increase pressure in extremity.
 - Reduces re-infiltration
 - Improves muscle pump
 - Helps to break up deposits of accumulated scar and connective tissue
 - Stays in place until next MLD session.

EXERCISE

- Goal: Enhance muscle pump activity and promote improved venous and lymphatic return in the involved extremity
- Diaphragmatic breathing
- Ankle pumps
- Walking
- Exercise with bandages in place

DIURETICS

- **MAKES LYMPHEDEMA WORSE!!!!!!!!!!!!!!**
 - Diuretics pull water off but leave protein molecules behind creating protein dense tissue that draws more water and creates fibrosis

Compression Pumps

- Compression Pumps
 - Not adequate for primary therapy
 - Do not address proximal edema
 - High cost with decreased compliance
 - Less convenient for associated exercise or mobility
 - Variable protocols
 - Single chamber
 - Multi chamber
 - Flexi-touch

BANDAGING

- Short stretch vs long stretch
- Generates low resting pressure
- Generates high working pressures
- Safe to wear day and night
- Works with the muscle to pump fluid back into the lymphatic system
- Comfortable at rest
- Does not interfere with circulation

BANDAGING PRINCIPLES

- More layers distally
- Apply varying widths
- Overlap bandages
- Apply tension evenly with all bandages
- MUST have conical shape
- Use foam to create cone

BANDAGING SEQUENCE

- Start at the foot just behind the toes
- 8 cm bandage on foot
- Bandage 2 starts just above crease of ankle and extends three fourths up leg (10 cm)
- Bandage 3 starts just above crease of ankle and extends to back of knee (12cm)
- Use additional bandages as needed for coverage
- Rosidol soft foam first layer

CONTRA-INDICATIONS

- Acute infection (cellulitis)
- Wait 72 hours after antibiotics then resume
- Cardiac Edema (Acute CHF)
- Arterial Disease
- Malignant lymphedema (relative contraindication)
- Use extra foam, reapply frequently NO compression sleeves

LONG TERM MANAGEMENT

- Combination of treatment and maintenance
- Bandaging should always be a component

GARMENTS

- KNOW YOUR PATIENT!!!!!!!!!!!!!!
- Age of patient
- Strength of patient
- Assistance available
- Custom vs off the shelf
- \$\$\$\$\$\$\$\$\$\$\$\$\$
- Comprehension

CUSTOM GARMENTS

- Jobst –Elvarex
- Medi –flat knit
- Juzo
- Sigvarus
- Flat knit vs circular knit
- Easier to don and doff
- Better containment
- \$\$\$

OFF THE SHELF

- One size fits most (none)
- Open toe easier than closed toe to put on
- Choose larger size especially at the ankle unless very young patient
- OK for venous patients
- Inappropriate for lymphedema

VELCRO PRODUCTS

- Easy to donn and doff
- Can be worn day and night
- Cost effective
- Comfortable
- Can be easily adjusted throughout the day
- Come in black and tan

AVAILABLE PRODUCTS

- Compreflex Sigvarus
- Comprefit Sigvarus
- Juxta-Fit Lite Medi
- Juxta- Fit Medi
- Farrow Wrap Jobst

Travel

- AS MUCH AS POSSIBLE!!!!!!!!!!!!!!!!!!!!!!
- Wear bandages on plane if already have lymphedema, otherwise do not wear sleeve

FIND A THERAPIST

- KLOSE TRAINING.COM
- NORTON SCHOOL OF LYMPHATIC THERAPY

FarrowWrap Jobst



Juxta-Fit Medi