Lower Extremity Lymphedema: Diagnosis & Management

Steven M. Dean, DO, FACP, RPVI
Clinical Professor of Internal Medicine
Division of Cardiovascular Medicine
Ohio State University Wexner Medical Center
Disclosures

• Scientific Advisory Board/Speaker- Tactile Medical
Lymphedema: *Diagnosis*

In the majority of patients with lymphedema, the diagnosis can be made with an adequate history and physical examination.
Physical Examination
Are foot & toe swelling more prominent in primary or secondary lymphedema?
Foot and toe involvement
Primary vs. Secondary Lymphedema
Are deep toe creases a phenotypic manifestation of primary or secondary lymphedema?
Deep transverse digital sulci = Primary lymphedema

Hypoplastic toenails = Primary lymphedema

“Ski Jump Nails” = Primary Lymphedema
Pronounced foot/toe swelling
Deep toe creases
Hypoplastic & Ski jump toenails

**Primary Lymphedema**
Identifying subtle distal signs of primary lymphedema...

1. Helpful in early cases of mild limb swelling where the dx is indeterminate

2. Helpful in late onset lymphedema cases, suggests diagnosis is primary. Allay fears of “CANCER”
Foot/toe swelling is NOT required to make a diagnosis of lower extremity lymphedema!
These patients have CVI with secondary lymphedema or PHLEBOLYMPHEDEMA.
Stemmer’s sign

- Inability or failure to pinch or pick up a fold of skin at the base of the 2nd toe
- Positive = lymphedema
- Negative = lipedema
Negative Stemmer Sign
Stage III Lymphedema encompasses lymphostatic elephantiasis …and further deposition of FAT…

Does not pit! 50% compression
Fat Deposition in Lymphedema

(Ref: Dr. C-H Håkansson, Dept of Oncology, Lund University Hospital)
Fat Deposition in Lymphedema
Stages of Lymphedema: International Society of Lymphology

Stage 0: Occult - no swelling

Stage I: Completely relieved by elevation
- Pitting

Stage II: Incompletely relieved by elevation
- Early - Pitting
- Late - Non pitting

Stage III: Elephantiasis with severe fibrosis; warty overgrowths; fat deposition pitting

Dean SM. Vasc Med 2000;5(4):261
ISL Stage III Lymphedema: Elephantiasis

“Cobblestoning”
Lymphedema: *Classification and Etiology*


Diagram showing classification of lymphedema into secondary (extrinsic damage) and chronic venous insufficiency, filariasis, recurrent infection, surgery involving lymphatics, radiation therapy, malignancy/tumor (advanced), and trauma.
Lymphatic transport in patients with CVI & Venous Leg Ulcerations

12 patients with active unilateral VLU underwent indocyanine green lymphography (ICGL) of the BLE

All 12 ulcerated limbs = abnormal ICG lymphography

Lymphatic transport in patients with CVI & Venous Leg Ulcerations

Contralateral non-ulcerated limbs:

• $C_5$ (n=8)- abnormal ICG

• $C_4$ (n=2)- abnormal ICG with dermal backflow following hemosiderin staining

• $C_0$ (n=2)- abnormal ICG

Massive Localized Lymphedema [MLL]

- “Pseudotumors”
- “Pseudosarcomas”

Brewer 2011 Ann Plast Surg - 41 pts; average weight 421 lb [160-619]
Lymphangiosarcoma

*Stewart -Treves Syndrome*

Mean survival: 20 months
Imaging
Lymphedema: Imaging

- Lymphoscintigraphy
- Computed tomography
- Magnetic resonance lymphography
- Lymphangiography

Image courtesy of Dr. John Rasmussen

Indocyanine green lymphography
THERAPY
Therapy: The Usual Suspects...

Ideal Position

30-40 mmHg
Five steps of Complete Decongestive Therapy (CDT)

1. Skin care
2. Manual Lymphatic Drainage + /- Intermittent Pneumatic Compression
3. Complex wrapping with low stretch bandages
4. Exercise program
5. Fit with compression garment
TREATMENT OPTIONS FOR SECONDARY LYMPHEDEMA PATIENTS WHO DO NOT IMPROVE WITH STANDARD TX

Surgical Treatment

Excisional Procedures

Physiological Procedures
TREATMENT OPTIONS FOR LYMPHEDEMA PATIENTS WHO DO NOT IMPROVE WITH STANDARD TX

- Surgical Treatment
  - Excisional Procedures
  - Physiological Procedures
PHYSIOLOGIC PROCEDURES

• Lymphovenous bypass

• Vascularized lymph node transfer

• Combination

Photos courtesy of Dr. Roman Skoracki, OSUMC Dept of Plastic Surgery
EXCISIONAL/REDUCTION PROCEDURES

• Excisional/Debulking/Panniculectomies

• Liposuction
Excisional/Debulking Surgery

Photos courtesy of William Wallace, MD
Modified Charles’ Procedure
Excess adipose tissue can be by removed by liposuction, but not by CDT, pneumatic pumping or microsurgery!