LYMPHOEDEMA
DIFFERENTIAL DIAGNOSIS

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Oedema = swelling
Increase in interstitial fluid volume

Oedema is a symptom of an underlying condition.

Correct diagnosis is essential

Various Mechanisms:
Increased capillary pressure eg: venous d or ccf
Decreased colloid osmotic pressure eg: hypoproteinemia
Impaired lymphatic drainage /flow eg: Lymphoedema
CAUSES OF OEDEMA

- **ACUTE < 3 Months:**
  - Deep vein thrombosis
  - Malignancy
  - Physiological injury, mechanical
  - Infection-cellulitis
  - Allergy

- **CHRONIC > 3 MONTHS:**
  - Venous insufficiency
  - Cardiac failure
  - Malignancy
  - Renal failure; liver failure
  - Thyroid disease
  - Post surgery
  - Medications
  - Malnutrition
  - Dependency
  - Obesity
  - Pregnancy
  - Lymphoedema
THE LYMPHATIC SYSTEM

- Drains 10% of lymphatic fluid daily not returned by veins (approx 2-4 litres of fluid)

- Clears bacteria, cell debris, protein from the interstitial space

- Absorbs fatty acids and transports fat as chyle into venous system
It affects 120 million people in the world.

Very rare in Western countries.

Wuchereria Bancrofti is a parasite transmitted by mosquitoes causing lymphatic obstruction.

**WHO Global Programme to Eliminate Lymphatic Filariasis**
Lymphoedema

- **Chronic** Swelling of a body part > 3MONTHS DURATION
  caused by impaired or reduced Lymphatic function
  resulting in accumulation of protein-rich interstitial fluid
  in the body’s tissues.

- Immunity is reduced in the affected body part.

- It affects approx 27 000 Australians.
Lymphoedema can affect:
- upper limb
- lower limb
- head and neck
- genitalia
- Abdominal apron
- Skin folds in obesity
- Trunk including breast
Types of Lymphoedema

PRIMAR Y - due to abnormal development of lymphatic system

SECONDARY - due to damage of lymphatics – most common

MIXED – due to lymphatic decompensation or failure eg: venous lymphoedema, lipo-lymphoedema, obesity/immobility related

ASSOCIATED LYMPHOEDEMA- with rheumatoid arthritis
- connective tissue disorders
- dermatitis
Diagnostic Delays

- All types of Lymphoedema = 3.3 yrs
- Primary Lymphoedema = 9.4 yrs
Most swelling is Not due to lymphoedema
Diagnosis and assessment of chronic oedema

OEDEMA

Onset: acute versus chronic >3months

Is it bilateral or unilateral?

Look for CANCER

EXCLUDE masses: pelvic/abdominal/lymphadenopathy

LOOK FOR Reversible causes of oedema
SYMPTOMS of chronic oedema >3/12 duration

- Swelling
- Heaviness
- Tightness, fullness
- Worse at the end of the day
- Better in the morning
- Worse in hot weather
Signs

- Unequal limb size
- Pitting oedema
- Stemmer’s sign
- Skin
- Full physical exam
Investigations

- Blood tests: FBE, U&E & CR, TFT, LFT, GTT
- URINALYSIS
- IMAGING: CXR, US or CT abdo pelvis, venous duplex scan
DVT (deep vein thrombosis)

- **ACUTE ONSET OF SWELLING**
- Exacerbation of chronic oedema
- MAY OR MAY NOT BE PAINFUL
- UPPER OR LOWER LIMB
- USUALLY UNILATERAL
- NEEDS IMMEDIATE REFERRAL FOR DOPPLER US
DVT increased RISK

- POST OPERATIVELY
- POST CANCER TREATMENT
- PROLONGED IMMOBILITY – HOSPITAL
- AIR TRAVEL
- POST INJURY
- MEDICATIONS EG: TAMOXIFEN, OCP, HRT
- PREGNANCY
- CLOTTING DISORDERS
Positive history of cancer?

YES

SECONDARY LYMPHOEDEMA
SECONDARY LYMPHOEDEMA

- Following surgery incl LN resection, radiotherapy, trauma, or other damage to lymphatic system eg: infection.

- Can occur at any time following surgery

- Early warning signs may be present for 3 years or more, however 70-80% present in the first 12 months
SECONDARY LYMPHOEDEMA

- AFFECTS APPROX 20% OF SURVIVORS TREATED FOR:
  - Breast ca- But risk reduced to less than 5% after SLNB
  - Melanoma
  - Gynaecological cancers (Higher after vulval ca treatment 47%)
  - Genitourinary ca
  - Prostate ca
In New onset of secondary LO(lymphoedema) or with exacerbation of stable LO

Always consider:

- TUMOUR RECURRENCE
- DEEP VEIN THROMBOSIS
- CELLULITIS
Oedema
no history of cancer

- Consider lymphoedema only if all other causes of oedema have been excluded.
- LOOK FOR CANCER
- LOOK FOR REVERSIBLE CAUSES
- IF UNSURE REFER FOR ASSESSMENT AND INVESTIGATIONS
OEDEMA AND VENOUS DISEASE

- Most common
- If ACUTE: - DVT
  - Tumor compression/invasion of veins
- If Chronic: - Venous insufficiency due to varicose veins
  - Post-thrombotic Syndrome
  - Slow compression of veins by tumor
  - Associated with obesity and immobility
CHRONIC VENOUS DISEASE

- Longstanding oedema pretibial (less foot swelling)
- Varicose veins
- Skin changes - hemosiderin stains
- Risk of ulcers
OEDEMA and Heart Failure....

- PROGRESSING PERIPHERAL OEDEMA
- INCREASING SOB
- TIREDNESS

- LISTEN TO CHEST FOR CREPITATIONS
- ORDER CXR
Oedema and Liver Disease

- Associated with other symptoms: weight loss, tiredness, jaundice
- Swelling may be generalized
- +/- ascites, hepatomegaly

- Check LFT
- Abdo US
Oedema and hypoalbuminaemia

- Due to low albumin levels
- In renal failure, advanced cancer, malnutrition, malabsorption
- Generalized swelling worse end of the day
- Diagnosis: LFT, renal function, urinalysis for proteinuria
Oedema and thyroid disease

- In primary Hypothyroidism - late sign
- Nonpitting pretibial myxedema rare today
- Check TFT
Oedema and medications

BEWARE OF MEDICATIONS CAUSING FLUID RETENTION:

- Antihypertensive eg: calcium channel blockers - amlodipine
- Steroids
- NSAID (Nonsteroidal antiinflammatory drugs)
- Oestrogens

BEWARE OF:

- Immunosuppressant sirolimus in transplant patients- side effect lymphoedema

DIURETICS ARE OF NO VALUE IN LYMPHOEDEMA
DEPENDENCY OEDEMA
ARMCHAIR LEGS

- AS A RESULT OF POOR VENOUS AND LYMPHATIC FLOW WHICH DEPENDS ON MUSCLE PUMP FOR EFFICIENT FUNCTION

- IN WHEELCHAIR BOUND PATIENTS WITH CHRONIC NEUROLOGICAL OR MUSCULAR DISORDERS EG: POST STROKE, SPINA BIFIDA, MS

- ASSOCIATED WITH OBESITY
Lipoedema vs lymphoedema

- Affects women
- Swelling bilateral ankles to hips
- Feet not swollen
- Skin tender & sensitive to pressure
- Stemmer’s sign negative
- Patient obese
- Does not resolve with Exercise and weight loss
- Lipolymphoedema develops late
Obesity

- Will exacerbate all types of oedema and lymphoedema
- Check BMI in all patients
- BMI = wt(kg)/ht(m)^2
Skin folds
obese patient
increased risk of intertrigo, candidiasis, cellulitis, and ulcers.
Primary Lymphoedema

-development defect of lymph vessels and/or lymph nodes:

  - **aplasia** – absence of lymphatics eg: in congenital LO
  - **hypoplasia** - reduced number of lymphatics
  - **hyperplasia** - increased in size and number but with valvular dysfunction

Classification based on age of onset:

- **Congenital**: 0-2
- **Preacox**: 2-35
- **Tarda**: >35
PRIMARY LYMPHOEDEMA

- Onset at any age—often young females eg: preacox
- Often unilateral lower limb or genitalia
- Precipitated by minor injury or no obvious injury
- All investigations for reversible causes normal
- May be hereditary eg: Milroy’s disease
- May be part of a syndrome
HISTORY: swelling, tightness, discomfort
aggravating /relieving factors
infections/trauma
past history sprained ankle
family history
medications

EXAMINATION: BMI 30
pitting
Stemmer’s sign
skin ?tinea
limb circumference
general examination
abdominal exam
Investigations

- To confirm diagnosis
- To exclude treatable cause
- Refer to green diagram for tests
- Consider arterial doppler prior to compression garments if worried about PVD
LYMPHOGRAPHY

-Nuclear Medicine test

-radioisotope is injected into 1\textsuperscript{st} web space of each hand or foot

-detects presence and impairment of lymphatic flow

-refers to a centre with experience in technique

-not required if diagnosis is clear

Normal

Delayed & reduced flow on the left
Lymphoedema - Complications

- Increasing swelling
- Impaired limb function
- Irreversible skin changes—fibrosis/Lymphorrhea /elephantiasis
- Increased risk of cellulitis/ulcers
- DVT
- New malignancies eg: lymphangiosarcoma
Dry Skin; Hyperkeratosis
Mossy Foot - papillomatosis on toes
also onychomycosis, tinea pedis
Lymphorrhoea
Leakage of lymphatic fluid causing superficial ulceration/maceration
High risk of cellulitis
Note inappropriate bandaging
Cellulitis and Lymphoedema

-local immune deficient area due to less macrophages and high protein content causing an inflammatory response.
-Strep Pyogenes rarely staph aureus

SYMPTOMS:

- FEVER
- REDNESS
- INCREASED SWELLING
- FLU LIKE SYMPTOMS
- MAY PROGRESS TO SYSTEMIC UPSET AND SEPSIS
Cellulitis and Lymphoedema

- Common
- Treat early with oral antibiotics
- Consider IV antibiotics with systemic upset
- Consider prophylactic AB if 2 or more episodes /year
- Refer to GP or emergency department for urgent treatment
- Recurrent cellulitis will cause more oedema
Diagnosis and assessment of chronic oedema

Presenting symptoms in limb/body part (one or more of the following, AND of chronic duration, i.e. > 3 months)
- Swelling
- Heaviness
- Pain or tension
- Tightness and fullness

HISTORY OF CANCER

Details of:
- Surgery
- Lymph node removal
- Radiotherapy
- Other surgery
- Complications (e.g. post-operative infection, etc)

Consider:
- Tumour recurrence
- DVT
- Cellulitis

NO HISTORY OF CANCER

Exclude other causes of oedema:
- Mass (pelvic, abdominal, lymphadenopathy)
- Cardiac, renal or hepatic failure
- Thyroid disease
- Medication side-effects
- Venous insufficiency (including past DVT, chronic ulcers)
- Chronic neurological disorders
- Obesity
- Immobility
- Other surgery

ABSENT

Secondary Lymphoedema

Investigate appropriately and refer back to patient's specialist

PRESENT

In medical history, exclude the above and ask about:
- Trauma to limb
- Past cellulitis, infection, ulcers
- Travel history
- Family history of limb swelling

Perform full physical examination
Also assess degree of pitting, skin condition, presence of Stemmer's sign and record limb girth circumferences

Investigations
FBE, U&E&CR, TFT, LFT, CXR, ESR, BMI > 35 – GTT
Legs: Ultrasound or CT scan (abdomen, pelvis), venous duplex scan

Consider lymphoedema as differential diagnosis (either primary, secondary or mixed)

Refer to lymphoedema practitioner or clinic for comprehensive assessment and management
For your nearest specialist practitioner or clinic contact:
Lymphoedema Association of Victoria – 1300 852 650
N.B. Patients should be advised that some practitioners and clinics have waiting lists
Summary

- Establish a correct diagnosis of oedema
- Perform a thorough assessment
- Look for reversible causes
- If unsure refer
- In exacerbation of existing lymphoedema
  look for: acute DVT
  cancer recurrence
  cellulitis
Resources

Lymphoedema guide:

www.gpv.org.au

The management of secondary Lymphoedema:

www.nbocc.org.au

Australian Lymphology Association

www.lymphology.asn.au
Management of Lymphoedema