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Post Carcinoma Breast - Lymphoedema Upper Limb - A Challenge

Prof. (Dr.) A. Ballav. Head, Dept. of Physical Medicine & Rehabilitation, IPGME&R, Kolkata

Introduction

Living with a swollen limb is difficult, due to cosmetic effect, altered body image, altered ADL and psychosocial insults. Although lymphoedema, following Breast Carcinoma, (Surgery, Radiotherapy etc.) is a symptom and not a disease, and it does not threaten the general health of the rest of the body is not amenable to surgery, or medical treatment - has thrown a great challenge to the Physiatrists.

Lymph, is actually a tissue fluid, containing water and protein, clotting factors, which clots on standing invitro. It is carried by superficial and deep lymphatics - drains into thoracic duct and Right lymphatic duct and finally to venous blood. Oedema is nothing but accumulation of interstitial fluid in abnormally large volume. Thus lymphoedema may be defined as - Abnormally large accumulation of interstitial fluid in extremity or body part, when there is increase in girth more than 2 cms. It is initially soft then firm and finally hard with penu de orange skin, resulting from impaired function, damaged or blocked lymph channels. Usually it is prone to infection (High Protein Oedema). Patient feels a sense of heaviness or tightness, uncomfortable and a deep aching sensation. It may be primary or secondary.

Pathogenesis

Post Carcinoma breast lymphoedema following surgery, radiotherapy, chemotherapy, is of secondary variety-where there are following pathological changes :

1) Fenestration of Basement membrane.
2) Loss of vasomotion.
3) Failure of compensatory mechanism-proteolytic activity of macrophages and lymphatic collateral circulations are exhausted.
4) Inadequate transfer capacity.
5) Lymphatic load is more
6) Increased hydrostatic pressure, and protein content
7) Increased proliferation of Fibroblasts.
8) Fibrosis of regional lymph nodes and interlobular septa.
9) Increased subcutaneous fatty tissue.
10) Thickening of deep fascia.

Incidence

1. In Carcinoma breast following Mastectomy : 6-70% Heelan reported.
2. With Axillary node clearance :
   According to Washer et al
   a) Transient -7%
   b) Perisistent-12%
3. Mean time of development of persistent lymphoedema-14 months.
4. Post radiation-9.1%
5. Post chemotherapy alone -3.2%
6. Lymphangiosarcoma following lymphaedema -1%
7. Factors influencing higher incidence : Obesity, extensive axillary disease, metastasis to axillary nodes.

Staging

I. Reversible, Pitting (some may present with increased arm girth).
II. Irreversible, Brauny, Fibrotic, Nonpittng.
III. (Rare in Post CA Br.pts)-cartilagenous hardening with papillomatous out growth and hyperkeratosis of skin.

Measurements

There is no consistent definition of "Clinically significant lymphoedema" Common approach :

Circumferential measurements at 4 points - i) MCP jit; (ii) Wrist (iii) 10 cms distal & proximal

to lateral epicondyle. Difference greater than 2 cms - at any of the 4 points defined by some as "clinically significance"

Other methods

(i) Volumetric measurement by water displacement technique.

(ii) Lymphoscintography

(iii) CT Scan, MRI, USG etc.

(iv) Taking UL as a cylinder-circumference at the level of base of thumb and then every 4 cms. till anterior axillary fold. Then by mathematical calculation total volume of the limb is calculated (even segmental volume may be calculated) Vol. (V) $\sum_{n=1}^{n} \frac{cm^2}{\pi}$

(v) c=circumference, n=no. of measurement

Why it should be interfered? Because of (1) Functional disability in -UL-alteration of ADL; (2) Cosmetic reason; (3) Psychological set back. When to interfere?

If appears immediately and resolves spontaneously-no treatment is required.

If there is cellulitis-proper antibiotics to be given.

If appears years after or more-suspect recurrence.

If painless, gradual forearm/arm/swelling; increase in girth above 2 cms, as compared to healthy limb, appearing 6 wks. or more, after operation, chemotherapy or radiotherapy-requires therapeutic intervention.

Is it preventable? yes. Is it curable? No. is it controllable? Yes.

Prevention

a) Avoid-Obesity, Trauma, Injection, Infection, Heat-Sun, Sauna, Steam.

b) Operative Measures-Reduction of Post operative 'Dead Space' by making 'High axilla:

Preservation of axillary-Lymphatic trunk-surrounding axillary vein.

c) Post-Op. Measures-(for CA breast) -On 1st Post op. day positioning of limb should be-shoulder -90° abduction; Elbow-straight; Forearm-supported on pillow.

On 2nd post op. day-Ipsilat. hand-ADL training in simple form combing, brushing etc.

On 3rd post op. day-simple exs. to regain strength. mobility, flexibility e.g. shoulder exercises, breathing exercises; over head reach wall climb, clasp-reach-spread and simple occupational therapy.

d) Positioning + moments - Avoid prolonged standing with swollen upper limb hanging; while sitting-keep arm straight and well supported. While walking-move arms a little. If oedematous limb feels tired and achy-rest a little.

Treatment

A) Goal-To help the pt. to achieve desired level of function So aims should be : Mobilisation of fluid, Reduction of girth, Prevention of complication.

B) Components - Counselling-pts' education regarding his problems, prognosis etc. skin care, exercises, massage, compression.

C) Key to success -No single treatment but permutation and combination of different components of treatment & regularity in treatment.

Counselling : Know your own problem. Know its' remedies. Learn do's and don'ts. Avoid spicy food and alcohol. Avoid harsh detergents.

Skin Care

Do's

Use gloves during washing

Use thimble during sewing lanolin based hand cream may be applied.

use your own limb

Don'ts

No injection on same limb

No blood sampling.

No B.P. measurement

No ornament

No tight clothing.

No heat-three 'S' -Sun, Sauna, Steam Don't cut cuticles during manicure

Exercise : Regular exercise. No vigorous exercise. 'Sleeve on' during exercise. Limbs elevated during the exercise. Exercise to prevent Shoulder stiffness. Exercise for drainage of lymph from healthy limb.

Method : R.O.M. exercise. Isometric exercises. Isotonic exercises. Breathing exercises -active or intermittent compression of the thoracic cage.

N.B. : Do them slowly, Rhyhmically, Repeatedly.

Massage : No talcom powder during massage. manual decongestive massage-stroking with deep constant pressure. First proximal then distal segment.

Lymph drainage massage

Upper Limb - Neck glands, then glands under normal

Arm-chest/back-shoulder.

Then swollen arm first, forearm, then hand.

(Compartmental drainage system - Circular motion should be applied - Centripetal technique should be followed.)

Always followed by deep breathing exercises.

Caution - Echymosis, Firmness.

Compression may be achieved -

1. By Compression Garments - Sleeves/ stockings.
2. By Pneumatic Compression Pump-Single Channel or Multi Channel.
3. By Faradism under pressure.

Garments

Provides enough pressure (40-50 mm of Hg.)

Pressure more on distal end

Firm fitting and comfortable.

Wear constantly-when up and about

According to Collins et al mean decrease in volume in proximal part of limb is 9% and in distal part 26%

May be combined with-pneumatic compression pump and Faradism under pressure.

Pneumatic compression pump :

Not every patient needs it.

Produce intermittent compression.

Pressure < 60 mm of Hg.

Position : U.L. 120^{o} shoulder abduction and well supported/elevated.

Followed by massage and pressure garment.

Follows rule of compartmental drainage.

Arm-squeezed by sleeves.

Result-only with pneumatic compression pump-18% one study, no statistically significant reduction (another study).

Caution : Swelling around-shoulder/back/chest/ arm/infection : (contra-indication).

Faradism under pressure :

Low frequency direct current

Surging may be given.

Used as substitute of pneumatic compression pump.

Electrodes are placed under crepe bandage.

Position of limbs -as before.

Compartmental drainage.

Caution : Same as before

Result : With sleeves 17% improvement.

Hindrance to the treatment and their management :

Sensation of numbness in ipsilateral side, medial aspect only assurance to the patients.

Discomfort or pain on operated axilla and chest-analgesics/TENS may be given.

Hyperaesthesia-local desensitisation techniques may be applied.

Chronic radiation plexopathy-exercises and analgesics.

Phantom breast sensation -only assure and counsel the patient.

Post operative winging of scapula-exercises.

Adhesive capsulites/tendinites-exercises.

Scar adhesion-exercises.

Infection-antibiotics.

Depression-Psychiatric treatment will be required.