Clinical Integration of Osteopathic Manipulative Medicine

Internal Medicine/ Family Medicine - Osteopathic Considerations in Patients with Lymphedema

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Introduction: Lymphedema is a condition resulting from increased proteinaceous fluid accumulating in the interstitial space. This can be due primarily from congenital and inherited disorders of the lymphatic system or more commonly due to secondary causes resulting in decreased lymphatic fluid drainage. The mechanism of action for the accumulation of lymphatic fluid in the interstitial space in lymphedema is lymphatic obstruction, not increased capillary permeability like in many other causes of edema.¹

Anatomically there are several areas that lymphatic obstruction can take place. Deep and superficial lymphatic drainage of the lower extremities meet in the pelvis and drain into the venous circulation through the thoracic duct, also known as the left lymphatic duct. The upper extremity lymphatics meet at each respective axilla. The left upper extremity lymphatic vasculature joins the venous circulation through the thoracic duct, along with the lymphatic contributions from both lower extremities, the gastrointestinal tract and the left upper thorax. The right upper extremity lymphatic vasculature and upper thorax drain into the right lymphatic duct.²

Secondary lymphedema is the most common type of lymphedema seen clinically in adults and is the result of other conditions or treatments. Risk factors in the western world include older age, obesity, inflammatory arthritis, cancer and cancer treatments such as axillary lymph node dissection and radiation.

Lymphedema is classified according to the maximum girth difference between the affected and unaffected limb as well as by physical exam findings and functional impairment.

American Physical Therapy Association³:
- Mild lymphedema- Maximum girth difference <3cm
- Moderate lymphedema- 3 to 5 cm difference
- Severe lymphedema- > 5 cm difference
National Cancer Institute:
- Grade 1- Trace thickening or faint discoloration
- Grade 2- Marked discoloration; limiting instrumental activities of daily living (ADL)
- Grade 3- Severe symptoms limiting self care ADL

Patient Presentation:
- Unilateral predominance (30% bilateral)
- Chronic, slowly progressing onset of swelling
- Upper or lower extremities
- Painless heaviness in extremities
- Early: soft skin with pitting
- Late: thickened hyperkeratotic skin without pitting
- Restricted range of motion
- Limited ability to perform activities of daily living

Differential Diagnosis:
Primary Lymphedema: Less common
- Congenital lymphedema, Lymphedema praecox, Lymphedema tarda

Secondary Lymphedema: More common
- Axillary node dissection
- Coronary artery bypass graft
- Inguinal lymphadenectomy
- Trauma
- Radiation
- Tumor
- Filariasis (most common world wide)

Clinical Pearls and Diagnostic Tools:
A clinical diagnosis is usually made through a patient’s history and physical exam. Because lymphatic flow cannot be seen or measured through ultrasonography, lymphoscintigraphy is used to show filling defects in lymphatic channels. This is used in conjunction with radionuclides and only necessary if a clinical diagnosis cannot be made.

Edema caused due to systemic problems other than lymphatic obstruction must be ruled out. For example allergic reaction, urticaria, angioedema, cardiac disease, hepatic disease, and renal disease.

Osteopathic Manipulative Medicine Integration: Due to the mechanical nature of the causes of lymphedema, medications are not the mainstay of treatment. Manual lymphatic drainage is the treatment of choice and is combined with other decongestive therapies such as skin care, range of motion exercises, etc. The use of compression stockings are utilized to maintain
structural support. Though diuretics are used for other types of extremity edema they are not appropriate for lymphedema.

Increasing lymphatic drainage and return to the venous system through manual techniques have long been practiced and only recently documented in the practice of osteopathic medicine. OMM has been used to reduce pain, edema, increase range of motion and functionality. In patients with lymphedema it has been proven that the flow and drainage of lymph is severely compromised. Modi et al proved through lymphoscintigraphy that patients with lymphoedematous arms had lymphatic pump failure in breast cancer treatment-related lymphedema. The breast cancer treatment required the removal of axillary lymph nodes leaving the arm susceptible to lymphedema. Modi et al found that manual lymphatic drainage was the most appropriate, non invasive, non surgical treatment for the side effect.

According to Kutchera and Digiovanna, a goal of an osteopathic approach to treatment is to increase drainage and lymphatic flow. Knott et al performed a study in dogs with osteopathic manipulative treatment showing that lymphatic flow was increased through the thoracic duct. The techniques used were both the abdominal and thoracic lymphatic pumps. The increased flow and drainage of lymph was comparable to the normal physiological pumps that a healthy body has during physiological exercise. This study was a collaborative effort between DO’s, MD’s and PhD’s.

From a physical therapy approach, Molski et al conducted a randomized controlled study that showed manual therapy techniques improved the quality of life in patients suffering from chronic venous disease. And in Hamner et al lymphedema therapy reduced the volume of edema and pain in patients with breast cancer. These therapies involved manual lymphatic drainage techniques as their mainstay of treatment.

In treating patients with lymphedema with an osteopathic medicine approach there are four goals in treatment. These goals follow the respiratory-circulatory model of osteopathic medicine. The first goal is to open myofascial pathways in the following transition areas: craniocervical, cervicothoracic, thoracolumbar, and lumbopelvic junctions. The second goal is to maximize diaphragmatic motion in these locations. This influences and minimizes the transverse restrictions of lymphatic flow which moves perpendicular to these areas. The third goal is to increase the pressure differential in order to meet the fourth goal of mobilizing tissue fluid into the lymphaticovenous system. Several of the techniques listed in the potential treatment options section meet one or more of these goals.

**Osteopathic Structural Examination:** Points of restriction and dysfunction may be found at different locations of transverse diaphragms, and these can impede lymphatic flow back to the venous circulation. Depending on the chronicity of the lymphedema TART (Tissue texture changes, Asymmetries, Range of motion restrictions, Tenderness) changes may be noted as well.

Potential Areas of restrictions:
Zink Patterns
Occipito-atlantal joint
Thoracic outlet
Abdominal Diaphragm
Pelvic Diaphragm
First rib, clavicle and scalenes
Axilla and Pectoral muscles

Tissue Texture Changes: soft, pitting edema versus leathery, non pitting edema
Asymmetry: Right versus left extremity
Range of Motion Restrictions
Tenderness: Pain versus heaviness

Potential Treatment Options:

- Thoracic outlet release
- Sibson facial release
- Abdominal diaphragm release
- Pelvic diaphragm release
- Rib raising
- Thoracic pump
- Abdominal pump
- Pedal pump
- Manual lymphatic drainage
- Range of motion exercises
- Physical activity
- Compression garments

References:


