Clinical Integration of Osteopathic Manipulative Medicine

Family Medicine: Osteoporosis

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Introduction:
In the United States, approximately 30 million women and 10 million men ages 50 years or older have osteoporosis, low bone mineral density, or both, placing them at risk for disabling fracture\(^1\). Osteoporosis is a progressive bone disease characterized by a decrease in bone mass and density which can lead to an increase of fractures. Osteoporosis clinically has no symptoms, but it is the cause of an increased number of fractures in both postmenopausal women and the elderly. It is defined by a bone mineral density of 2.5 standard deviations or more below the mean measured by a DEXA scan.

Clinical Presentation:
- A history of loss of height
- Low body weight (BMI <19 kg/m\(^2\))
- Increased kyphosis or dowager hump
- Point tenderness over a vertebrae or other suspected fracture sites
- Increased number of fractures

Differential Diagnosis:
- Hyperparathyroidism
- Multiple Myeloma
- Osteomalacia
- Paget’s Disease
- Scurvy
- Sickle Cell Anemia
- Mastocytosis
- Homocystinuria

Risk Factors:
Risk factors for osteoporosis are advanced age and female sex due to a significant decrease in estrogen after menopause. Other risk factors also include Caucasian and Asian race, excessive alcohol consumption, vitamin D deficiency, smoking, malnutrition,
use as well as family history. Some medications that have been linked to osteoporosis include glucocorticoids, antiepileptics, immunosuppressants, proton pump inhibitors, anticoagulants, and chronic lithium therapy.

**Mechanism:**

The underlying mechanism behind osteoporosis is an imbalance between bone formation and bone resorption\(^2\). The three main mechanisms by which osteoporosis develops are an inadequate peak of bone mass, excessive bone resorption, and inadequate formation of new bone during remodeling\(^2\). Hormonal factors also play a role as well. One of the major physiological effects of estrogen is to inhibit bone reabsorption, so a lack of, post menopause increases bone resorption possibly leading to osteoporosis. More than 40% of postmenopausal women with osteoporosis are expected to experience at least one fragility fracture\(^4\). As a result the USPSTF (United States Preventative Task Force) recommends that all women 65 years or older be screened with a DEXA scan\(^4\).

**Clinical Pearls and OMM Integration:**

Typically management of osteoporosis to prevent fractures and bone loss consists of lifestyle modifications such as cessation of alcohol and tobacco, supplementation with vitamin D and calcium, weight bearing exercises and pharmacologic therapy.

Recommended drug therapies used include biphosphonates and in the case in of postmenopausal women, selective estrogen receptor modulators can also be used. These selective estrogen receptor modulators replace estrogen therefore inhibiting bone loss\(^4\).

Osteopathic manipulative medicine has shown to improve long-term patient outcomes. Osteopathic manipulative medicine’s main goals are to normalize autonemics and joint motion, balance soft tissue tension, support the body’s inherent motion, and improve circulation. Some OMT techniques that can be applied to help remove somatic impediments to normal activity in addition to decreasing the risk of falls and in due course, fractures include counterstrain, Osteopathy in the Cranial Field, muscle energy, myofascial release, lymphatic and articulatory techniques, as well as the Still Technique. Prior to performing these techniques assessing the following regions: occipito-atlanto joint, thoracic inlet, diaphragm, ribs, pelvis, sacrum, popliteal fossa, and piriformis, psoas and paraspinal muscles would ultimately benefit to optimize treatment.

The osteopathic approach uses a wide range of techniques: the presence of bone demineralization and degree must be taken into consideration when performing the treatment as a contraindication to the application of certain maneuvers. Especially when taking into account a patient with a fracture. Such maneuvers that are contraindicated include HVLA, muscle energy, and certain articulatory and lymphatic techniques.

Because osteoporotic patients benefit from exercise on weight bearing joints, using various gentle techniques such as facilitated positional release may help activate problematic muscles, ligaments, and/or joints. Counterstain is a more gentle and passive technique that may be beneficial in advanced osteoporotic patients and can help patients with localized pain symptoms. Use of osteopathic exercises may be helpful to help
strengthen pelvic and shoulder girdles promoting better active range of motion and better quality of life.

**Osteopathic Structural Exam:** Structural examination of the upper extremity, cervical region, and upper thoracic regions as well as lower extremities and the innominates should be performed. Additional screening for dysfunctions in:

- Occipito-atlanto joint
- Thoracic inlet
- Diaphragm
- Ribs
- Pelvis
- Sacrum
- Popliteal fossa
- Piriformis
- Psoas and paraspinal muscles

Possible Treatment Options:

- Osteopathy in the Cranial Field
- Muscle energy
- Facilitated Positional Release
- Myofascial release
- Lymphatic drainage techniques
- Articulatory techniques
- Still’s Technique
- Counterstain

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