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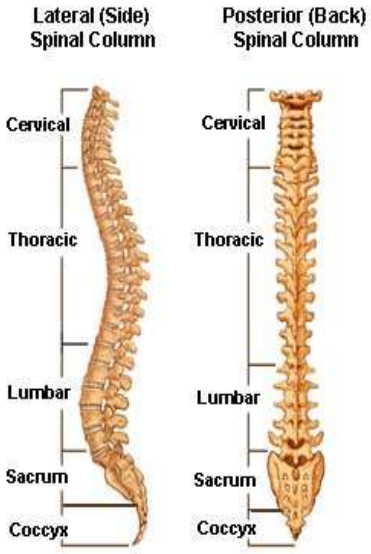
A PATIENTS GUIDE TO: OSTEOPOROSIS AND COMPRESSION FACTURES

Osteoporosis and Compression Fractures

What Is It?

Osteoporosis is caused by decreased bone mass resulting in fragile bones. Progressive osteoporosis may cause loss of height, stooped posture, a humpback (kyphotic curve), and severe pain. It commonly affects the thoracic and thoracolumbar regions of the spine and may cause debilitating pain. The structural deterioration of bone increases the risk for fracture in the hip, spine, and wrist.



The Osteoporosis and Related Bone Disease National Resource Center report that "Osteoporosis is responsible for more than 1.5 million fractures annually, including 300,000 hip fractures and approximately 700,000 vertebral fractures, 250,000 wrist fractures, and more than 300,000 fractures at other sites." Normally associated with aging, osteoporosis contributes to fractures in older people. Many adults reach peak bone mass by age 30 - thereafter, small amounts of bone are naturally lost. This gradual reduction in bone density increases the risk for fracture. Spinal fractures (wedge, compression, burst) often affect one or more of the vertebral bodies. In some cases, the patient is unaware they have osteoporosis until fracture occurs. In severe osteoporosis, simple movements like bending, twisting, walking, or reaching can cause vertebrae to collapse.

Uncontrollable Risks

The disease is often progressive and, although osteoporosis cannot be cured, it may be controlled or prevented. Understanding the risks can be an important key to prevention. Some of the 'uncontrollable' risks include:

Gender

Women are at higher risk than men because they have less bone mass, experience menopause, and live longer.

Race

Asian and Caucasian women, especially small boned women, are at highest risk for osteoporosis. Black people, especially men, are at lower risk because their bone mass is greater.

Family History
If there is a family history (e.g. maternal) it is important to tell your physician. Some risks can be controlled' by the patient. These include poor diet, smoking, excessive alcoholic intake, and an inactive lifestyle. Certain medications and metabolic disorders contribute to osteoporosis such as Cushing's Syndrome, hyperthyroidism, and hyperparathyroidism. Also, there are gastrointestinal disorders that can inhibit the body's ability to properly absorb calcium. In some cases, the osteoporosis is termed idiopathic, which means the cause is unknown.

Diagnosis Steps

Physical Examination
A thorough physical examination reveals a lot about the health and general fitness of the patient. The exam includes a review of the patient's medical and family history. A family history of osteoporosis or other attributing medical disorders is noted. The physician also requires laboratory tests including complete blood count, urinalysis, and thyroid function.

Neurologic Evaluation
A neurologic evaluation assesses the patient's symptoms including pain, numbness, paresthesias (e.g. tingling), extremity sensation and motor function, muscle spasm, weakness, and bowel/bladder changes. Particular attention may be given to the lower extremities. Either a CT Scan or MRI study may be required if there is evidence of neurologic dysfunction.

Radiographs and Bone Density Tests
An x-ray is performed if fracture is suspected. However, routine x-rays do not always confirm a diagnosis of osteoporosis. Tests that reveal bone density are more accurate. DEXA (dual energy x-ray absorptiometry) is a radiographic test used to measure bone density in the spine, hip, and wrist.

Bone Mineral Density (BMD) can also be used to measure bone density in the spine, hip, and wrist. This procedure is painless and noninvasive. It may be used to confirm a diagnosis of osteoporosis. BMD also detects low bone density and the rate of bone loss. Low bone density is an indicator, or early warning, that osteoporosis exists. The rate of bone loss helps the physician measure treatment progress.

The physician compares the test findings to the patient's symptoms and formulates a treatment plan.

Non-Surgical Treatment
The patient needs to understand the diagnosis and how osteoporosis may affect his or her life. This might include making healthy life style changes to diet and exercise, and addressing home safety to prevent falls. The treatment for osteoporosis is usually non-operative. Conservative treatment options may include the following:

1. Pain management may include nonsteroidal anti-inflammatory drugs (NSAIDs), narcotics, prescription anti-inflammatory medications, topical pain relieving agents, nerve blocks, or nerve ablation (nerve removal). A pain management specialist is consulted when pain is difficult to control.

2. Hormone replacement therapy (HRT) or Estrogen replacement therapy (ERT) is beneficial to many post-menopausal women or those at high risk for osteoporosis. It is known that for the first 5 years following menopause women rapidly lose bone mass. The medication is available in pill or skin patch form.

3. Alendrontate (brand name Fosamax® is a drug known to stop the breakdown of bone.

4. Raloxifene (brand name Evista® is part of a new class of drugs called Selective Estrogen Receptor Modulators (SERMs).

5. Calcitonin is a non-sex hormone known to slow the loss of bone while helping to increase bone density. It is reported to relieve pain associated with fractures. It is available in nasal spray form.

6. Calcium and Vitamin D is important to bone health (e.g. mass). Follow the physician's instructions.

7. Bracing may be used to alleviate pain and provide spinal support. A spinal physician is able to determine if the patient would benefit from bracing.

8. Physical therapy (PT) may be incorporated into the treatment plan. PT can help the patient build strength, flexibility, and increase range of motion. Exercise promotes circulation that stimulates bones to heal and strength builds balance, which may help to prevent falling. During PT the patient is taught 'safe' movements to help prevent injury. The therapist may provide a customized home exercise program.

Surgery
Vertebroplasty is a procedure used to treat some patient's with osteoporosis. The affected vertebrae are injected with special orthopaedic cement that may relieve pain. The vertebrae weakened by osteoporosis can actually be made stronger by the cement. Patients usually go home the day following the procedure. This procedure is not for all patients with osteoporosis.

Steps to a Healthy Recovery

Always follow the instructions provided by the physician and/or physical therapist.

> Take medication as directed. Report side effects to your physician immediately.

> Follow the home exercise program provided by a physical therapist.

> Modify your physical surroundings (e.g. home) to prevent falls.

> Remember a proper diet is essential to treating and preventing osteoporosis.

> Avoid alcoholic beverages.

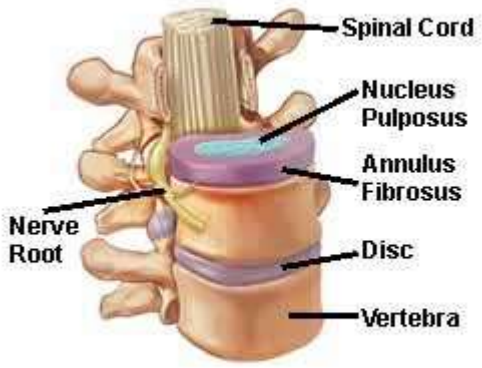
> Stop smoking.

One of the most common results of fragile bones is vertebral compression fractures. While these types of fractures can be the result of trauma or tumors, they are seen most often in people with osteoporosis. In fact, they are the most common complication of osteoporosis. In people with advanced osteoporosis, compression fractures can occur as the result of simple daily activities such as bending, carrying heavy loads, or a minor fall.

What are Compression Fractures?

Compressive Forces
A compression fracture results from tension created by external force (e.g. trauma). The

compressive force can cause one or more vertebrae to crush, burst, or wedge. The fracture may 'compress' the spinal cord or nerve roots resulting in neurologic deficit. These fractures cause acute pain.



Osteoporosis

The risk for compression fracture increases with age. Osteoporosis, a bone weakening disease greatly increases the risk for compression fracture. Trauma (e.g. falling) or simply bending may cause compression fracture in an osteoporotic spine. Over time, thoracic compression fractures can create a kyphosis (e.g. humpback) accompanied by disabling pain and neural compromise

The spinal column (or vertebral column) extends from the skull to the pelvis and is made up of 33 individual bones called vertebrae. The vertebrae are stacked on top of each other with shock-absorbing discs in between them. This is what gives the spine its flexibility. Because vertebrae are made up of softer bone tissue than other harder bones in the body, they are particularly vulnerable to osteoporosis.

Compression fractures occur when the vertebrae collapse, decreasing the space between them by 15-20%. This compression causes chronic back pain, loss of height (this is why many older people seem to shrink as they age), deformity (called kyphosis but often called a "dowager's hump" or "humpback"), and, in severe cases, neurological symptoms such as numbness, tingling, or weakness. If there are multiple compression fractures along the vertebral column (as is common) difficulty walking and a loss of balance is common. This leaves people with an increased risk of falling and breaking other bones, such as hips.

Compression fractures are often diagnosed only after a person seeks medical attention either for pain relief or after a fall. However, many compression fractures go undiagnosed and their symptoms are attributed to being an inevitable part of aging.

Nerve Injury

The degree of neurologic injury is usually due to the amount of force present at the time of injury and the amount of compromise of the spinal canal. If the fracture bursts, bony fragments can be forced into the spinal canal causing loss of spinal cord function. This may cause loss of strength, sensation, or reflexes below the level of injury. In an incomplete spinal cord injury only partial paralysis or reflex loss is seen. With mild fractures only transient symptoms may be present or no neurologic injury may be present.

Treatment of Compression Fractures

Traditional treatment for compression fractures include pain medications, bed rest, bracing or, in very severe cases, surgery. Today there are two promising therapeutic and preventive treatments for compression fractures called vertebroplasty and kyphoplasty. These procedures utilize orthopedic cement, which is injected into the space between the vertebrae. The cement hardens and returns the vertebral space to its original height. This procedure can restore height, relieve pain and strengthen other vertebral bodies that are weakened but not yet fractured, thus preventing future problems.

Prevention of Compression Fractures

Preventing osteoporosis is key to preventing compression fractures. Prevention efforts should begin early with eating a well-balanced diet rich in vitamins and minerals, exercising daily, and making healthy lifestyle choices like not smoking. In people for whom osteoporosis is already a problem, there are medications that can help increase bone density and strength. For these people, a healthy diet and exercise is also very important. Maintaining bone strength will not only keep you healthy, it will prevent your bones from becoming fragile and vulnerable to fractures. If you are concerned about your health or your chances of getting osteoporosis, talk to your doctor. A bone density scan is an easy and painless way to detect early signs of this disease.