

OSTEOPOROSIS – A “Silent Disease”

“Love your Bone: Protect your future”

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Abstract

Osteoporosis is a condition that affects the bones. It is a condition characterized by low bone mass and micro-architectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture. 61 million people in India have osteoporosis, out of these, 80% are women. Among Indian women it ranges from 8 to 62%. Among male, it ranges from 8.5 to 24.6%. Osteoporosis does not become clinically apparent until a fracture occurs and so it is sometimes referred to as the “silent disease.” It can be diagnosed and prevented with effective treatments, before fractures occur. Therefore, the prevention, detection, and treatment of osteoporosis should be a mandate of primary healthcare providers.

Keywords: osteoporosis, silent disease, fracture

1. Introduction

Osteoporosis is a condition that affects the bones. The inside of a healthy bone has small spaces, like a honeycomb. Osteoporosis increases the size of these spaces, causing the bone to lose strength and density. It is a condition characterized by low bone mass and micro-architectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture. It increases the risk of incident fragility fractures. Fragility fractures are a major health concern that contribute significantly to morbidity and increased mortality.

Incidence

- 61 million people in India have osteoporosis, out of these, 80% are women.
- Among Indian women it ranges from 8 to 62%.
- Among male, it ranges from 8.5 to 24.6%.

Risk factors

Unchangeable risks	Hormonal causes	Dietary/ lifestyle causes	Steroids and other Medications	Medical causes
✓ Women are at more risk	✓ Fall in estrogen levels in women	✓ Low calcium intake	✓ Long-term use of oral or injected corticosteroid medicines, such as prednisone and cortisone,	✓ Celiac disease.
✓ Older person (more than 50 years)	✓ Fall in testosterone levels in men	✓ Eating disorders	✓ Anti-epileptic medications.	✓ Inflammatory bowel disease
✓ Race : white or Asian descent.	✓ Hyperthyroidism	✓ Sedentary lifestyle	✓ Proton pump inhibitors.	✓ Kidney or liver disease.
✓ Family history	✓ Hypothyroidism	✓ Excessive alcohol consumption ✓ Smoking	✓ Cancer medications	✓ Rheumatoid arthritis.
✓ Men and women who have small body frames	✓ Overactive parathyroid and adrenal glands.	✓ Tobacco use	✓ Selective serotonin reuptake inhibitors, to treat depression and anxiety.	✓ Multiple myeloma.
✓ Height and weight: Being over 5 feet 7 inches tall or weighing under 125 pounds increases the risk			✓ Thiazolidinediones For type 2 diabetes.	✓

Signs and symptoms

Osteoporosis does not become clinically apparent until a fracture occurs and so it is sometimes referred to as the “silent disease.”

Symptoms

There is no symptoms in the early stages of bone loss. But once bones have been weakened by osteoporosis, the following signs and symptoms that include:

- Back pain, caused by a broken or collapsed bone in the spine.
- Loss of height over time.
- A stooped posture.
- A bone that breaks much more easily than expected.

Clinical features of vertebral fractures

- Two-thirds of vertebral fractures are painless, although patients may complain of the resulting stooped posture and height loss.
- The episode of acute pain may follow a fall or minor trauma.
- Pain is localized to a specific, identifiable, vertebral level in the midthoracic to lower thoracic or upper lumbar spine.
- Sharp, nagging, or dull pain; movement may exacerbate pain; pain may radiates to the abdomen.
- Pain is often accompanied by paravertebral muscle spasms exacerbated by activity and decreased by lying supine.
- Acute pain usually resolves after 4-6 weeks; in the setting of multiple fractures with severe kyphosis, the pain may become chronic.

Clinical features of Hip fracture

- Pain in the groin, posterior buttock, anterior thigh, medial thigh, and/or medial knee during weight-bearing or attempted weight-bearing of the involved extremity
- Diminished hip range of motion (ROM), particularly internal rotation and flexion.

Clinical features of Vertebral Compression fractures

- With acute vertebral fractures, point tenderness over the involved vertebra
- Thoracic kyphosis with an exaggerated cervical lordosis (dowager's hump)
- Subsequent loss of lumbar lordosis
- A decrease in the height of 2-3 cm after each vertebral compression fracture and progressive kyphosis

Clinical features of Colle's fractures

- Pain on movement of the wrist
- Dinner fork (bayonet) deformity

Clinical features of Pubic and Sacral fractures

- Marked pain with ambulation
- Tenderness to palpation, percussion, or both

- With sacral fractures, pain with physical examination techniques used to assess the sacroiliac joint.

Diagnosis

- Bone density scanning uses a type of X-ray known as Dual-Energy X-ray Absorptiometry (DEXA).
- DEXA can indicate the risk of osteoporotic fractures. It can also help monitor a person's response to treatment.
- Two types of devices can carry out a DEXA scan:
 - **A central device:** This is a hospital-based scan that measures hip and spine bone mineral density while the individual lies on a table.
 - **A peripheral device:** This is a mobile machine that tests bone in the wrist, heel, or finger.

DEXA test results can be provided as T score and Z score.

Good bone strength	-1.0 SD or above
Osteopenia	-1.1 to -2.4SD
Osteoporosis	-2.5 SD or below

Treatment

Treatment aims to:

- slow or prevent the development of osteoporosis
- maintain healthy bone mineral density and bone mass
- prevent fractures
- reduce pain
- maximize the person's ability to continue with their daily life

People at risk of osteoporosis and fractures can use preventive lifestyle measures, supplements, and certain medications to achieve these goals.

Drug therapy

Drug of choice	Action
1. Bisphosphonates	<ul style="list-style-type: none"> ✓ It is an anti-resorptive drugs. ✓ It slow bone loss . ✓ It reduce a risk of fracture
2. Selective estrogen-receptor modulators (SERMS). Eg.. Raloxifene (Evista)	<ul style="list-style-type: none"> ✓ It can reduce the risk of spine fractures in women following menopause.
3. Calcitonin (Calcimar, Miacalcin):	<ul style="list-style-type: none"> ✓ It helps to prevent spinal fractures in postmenopausal people and ✓ It can helps to manage pain after a fracture.
4. Parathyroid hormone, such as teriparatide (Forteo):	<ul style="list-style-type: none"> ✓ It helps to treat high fracture risk as it stimulates bone formation.
5. Monoclonal antibodies (denosumab, romosozumab):	<ul style="list-style-type: none"> ✓ These are immune therapies that some people with osteoporosis take after menopause

Prevention

Calcium : It is essential for bones.

- ✓ Adults ages 19 years and above should consume 1,000mg of calcium a day.
- ✓ Females over 51 years and all adults from 71 years onward should have a daily intake of 1,200 mg.
- Dietary sources include: dairy foods, such as milk, cheese, and yogurt green leafy vegetables, such as kale and broccoli, fish with soft bones, such as tinned salmon and tuna, fortified breakfast cereals.
- Calcium intake is inadequate, supplements are an option.

Vitamin D

- ✓ It helps to prevent osteoporosis.
- ✓ It helps to improve the absorption of calcium.
- ✓ Dietary sources include fortified foods, saltwater fish, and liver. Mostly, vitamin D does not come from food but from sun exposure,

Lifestyle Modifications

- **Avoid smoking:** can reduce the growth of new bone and decrease estrogen levels in females.
 - **Limit alcohol intake :** To encourage healthy bones and to prevent falls
 - **Do regular weight-bearing exercise:** such as walking, climbing stairs, resistance training, such as: leg presses, squats, push ups, weight training, such as working with: resistance bands, dumbbells, resistance exercise machines: this promotes healthy bones and strengthens the muscles.
 - **Performing exercises:** to promote flexibility and balance, such as yoga, can reduce the risk of falls and fractures
- ✓ **Fall prevention techniques :** is reducing the risk of fracture and the rate of bone loss for people who already have osteoporosis.

Prevention of Fall

- ✓ Remove objects that can cause a person to trip, such as throw rugs, electrical cords and clutter
- ✓ Ensure mats are firmly affixed and repairing loose carpet
- ✓ Install non-skid mats in the toilet, bath or shower
- ✓ Keep furniture's out of walking paths.
- ✓ Install handrails in bathrooms.
- ✓ Have extra light switches or using remote switches such as motion sensors
- ✓ Ensure there is plenty of light in the home
- ✓ Using non-skid floor wax and wiping up spills immediately in the kitchen.
- ✓ Have regular vision screenings and keep eyewear up to date
- ✓ Wear comfortable shoes with good support, a broad heel and non-slip soles.
- ✓ Practice exercise that helps with balance, such as tai chi
- ✓ Ask the doctor to review medications to reduce the risk of dizziness.

Conclusion

Osteoporosis is a common and silent disease until it is complicated by fractures that become common. It was estimated that 50% women and 20% of men over the age of 50 years will have an osteoporosis-related fracture in their remaining life. These fractures are responsible for lasting disability, impaired quality of life, and increased mortality, with enormous medical and heavy personnel burden on both the patient's and nation's economy. It can be diagnosed and prevented with effective treatments, before fractures occur. Therefore, the prevention, detection, and treatment of osteoporosis should be a mandate of primary healthcare providers.

References

1. Ace Mc Cloud “ Osteoporosis: How To Treat Osteoporosis: How To Prevent Osteoporosis: Along With Nutrition, Diet And Exercise For Osteoporosis” (2017)
2. Lane Nancy E. : “The Osteoporosis Book: A Guide for Patients and Their Families" (2001)
3. Dale W. Stovall MD , “Osteoporosis: Diagnosis and Management” (2013)
4. <http://www.mayoclinic.org>
5. <http://medlineplus.gov>
6. <http://medicalnewstoday.com>