

Fractures of the Spongiotic Areas of the Skeleton as Indicator of Osteoporotic Installations

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ABSTRACT

Introduction: Osteoporosis is a metabolic disease characterized by the loss of bone mass. The bone becomes weak and appears honeycomb-like under a microscope. It is a serious, progressive, and economically costly disease. It is considered a silent disease, and bone fractures are often the first sign of osteoporosis. It is responsible for more than two million broken bones and \$19 billion in costs each year. By 2025, experts predict that osteoporosis will have increased about fivefold.

Purpose of the study: 1. To analyze the correlation of osteoporotic phenomena with the frequency of fractures of cancellous bone areas. 2. To increase knowledge about osteoporosis, risk factors and its treatment.

Study Material and Method: The study material belongs to the period January 2020 to February 2024. We used the Card Service of the University Center "Mother Teresa" Tirana; The Emergency Service at the University Trauma Hospital; The Card Service of the Regional Hospital Xhaferr Kongoli Elbasan.

Our study material includes 62 patients with injuries of the cancellous bone areas caused by minimal trauma, such as simple falls even from a height, body rotations, sudden bending of the waist, etc. All are fresh fractures; from the moment of the fracture to their presentation to the hospital, no more than 10 days have passed. Based on gender, age and fracture area, we observed the following division: By gender: Males (16 -26%); Females (46-74%) By age: Up to 50 years (10 - 16%); 51- 60 years (20 - 32%); 61- 70 years (25 - 40%); Over 71 years (7 - 12%) By fracture area: radial fractures (18 - 29%); vertebral column fractures (12 - 19%); fractures of the trochanteric area (32 - 52%).

Conclusions

1. Prevent and slow down the phenomena of osteoporosis, especially in women before, during and after menopause.
2. Prevent as much as possible accidental injuries, which cause fractures of the spongy areas of the skeleton, in the elderly.
3. Determine the cause of osteoporosis in men and women and take appropriate measures.
4. Apply antiplatelet preparations to reduce thromboembolic complications.
5. Continued treatment of osteoporosis is the main condition for stopping the deepening of osteoporosis.

Keywords: Fracture, Spongy Area, Osteoporosis, Thrombolytic Complications

Introduction

Osteoporosis is a metabolic disease characterized by the loss of bone mass; the bone becomes weak and, as a result, fractures. Under a microscope, healthy bone looks like a "honeycomb." It is a progressive and economically costly disease. Osteoporosis

is responsible for two million broken bones and \$19 billion in related costs each year. By 2025, experts predict that osteoporosis will have increased fivefold. It is easier to prevent than to treat.

Osteoporosis presents with these clinical signs

1. Decrease in the height of osteoporotic vertebrae.
2. Bone pain and general complaints.
3. Anatomical changes in the bone. spongy, etc,

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4. Osteoporotic bone spurs.



Figure 1.0: Fractures of the spongy areas of the skeleton

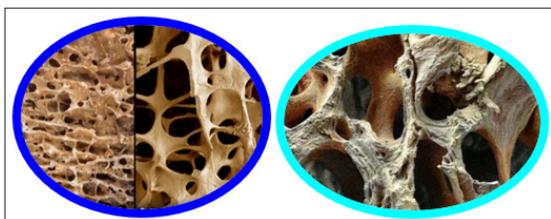


Figure 1: comparison of spongy bone affected by osteoporosis with normal bone

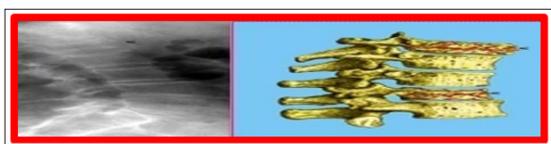


Figure 2: Vertebral column fracture at two levels in osteoporotic terrain

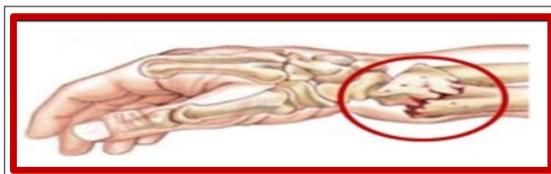


Figure 3: Radius fracture in typical location



Figure 4: Marginal wedge-shaped fracture in osteoporotic terrain



Figure 5: Fracture of the upper femoral end

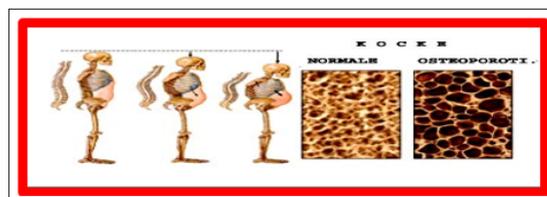


Figure 6: osteoporotic hip

Purpose of the study

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1. To analyze the correlation of osteoporotic phenomena with the frequency of fractures of cancellous bone areas.
2. To increase knowledge about osteoporosis, risk factors and its treatment.



Figure 7: Comparison of normal bone with spongy bone

Material and methods of the study

Our study material includes 62 patients with injuries to the cancellous bone areas caused by minimal trauma, such as simple falls even from a height, body rotations, sudden bending of the waist, etc. All are fresh fractures; from the moment of the fracture to their presentation to the hospital, no more than 10 days have passed. The study material dates from January 2019 to February 2021. We used the Card Service of the University Center “Mother Teresa” Tirana; the Emergency Service at the University Trauma Hospital; the Card Service of the Regional Hospital Xhaferr Kongoli Elbasan. From a general classification of our study material, we noted that:

By gender: Male (16 -26 %); Female (46-74 %).
 By age: up to 50 years (10 - 16 %); 51- 60 years (20 - 32 %); 61- 70 years (25 - 40 %); over 71 years (7 - 12 %).
 By fracture area: radial fractures (18 - 29 %); vertebral K. fractures (12 - 19 %); trochanteric Z. fractures (32 - 52 %).

Osteoporosis and radial fractures in the typical location

Distal radial end fractures account for up to 20% of all fractures. They are fractures where, in addition to trauma, osteoporosis also plays a role. Distal radial end fracture is often the beginning of the appearance of osteoporosis as a general disease. Most fractures are caused by a fall on the outstretched arm with the hand in dorsiflexion. In our study series we encountered radial fracture in the typical location in osteoporotic terrain in 18 individuals of whom 6 males and 12 females. The average age of men was Mean 66 years. Max. 71 years and min 63 While for women we have the following data: Mean 58 years. Max 63 years. Min 55 years. Mechanism of trauma: The cause of the fracture is a fall on the extended hand with the forearm in full extension. A fall on the flexed hand will result in a fracture inverse to that of Colles, which is called Smith’s fracture.

The classification of radius fractures is done in relation to the mechanism of decompression. For the purposes of our study, we have considered the division of radial fractures into two types: Smith Type and Colles Type, which are related to the mechanism of trauma and the method of treatment.



Figure 8: Traction mechanism in radius fractures

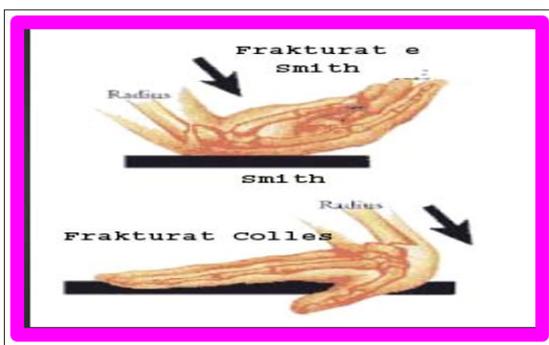


Figure 9: Smith fracture and Colles’s fracture

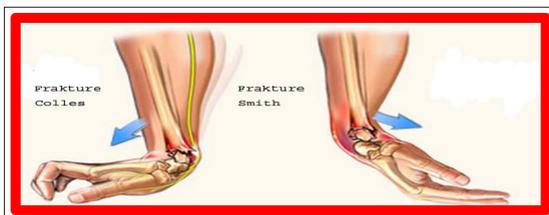


Figure 10: classifications of radius fractures

Characteristic for radius fractures is the fork-shaped deformation, a characteristic sign of radius fractures in the typical location.

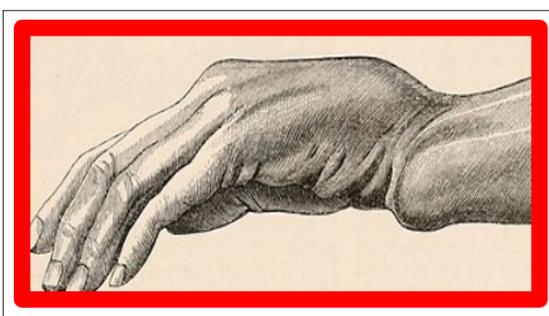


Figure 11: characteristic deformation in the shape of a fork

Although the clinic gives a clear diagnosis, radiography is mandatory to exclude additional injuries. The treatment of these fractures is mainly conservative, reduction and immobilization

in a plaster cast with the hand flexed and in ulnar deviation. Immobilization in a plaster cast lasts three weeks. Rehabilitation exercises are started immediately after removal of the plaster. Antiosteoporosis therapy is applied. Today there are many of these. We prefer the administration of calcium accompanied by anabolics and vitamin A + D, OMEGA -3. This type of treatment should be used for a long time. Surgical treatment is applied with special indications. Immobilization in a plaster cast no more than three weeks after osteoporosis deepens.

Vertebral column fracture in the context of osteoporosis

Osteoporosis is a “silent” disease, therefore there are no symptoms until a vertebral fracture occurs, without any very obvious cause. When Osteoporosis is installed in the vertebral column, the bones become very weak and are more likely to break. It often develops unnoticed for many years, without any symptoms until the bone breaks.

Clinical manifestations of vertebral fracture include

1. Sudden onset of back pain
2. Standing or walking will usually make the pain worse
3. Lying on the back makes the pain less intense
4. Limited spinal motion
5. Loss of height
6. Deformity and disability

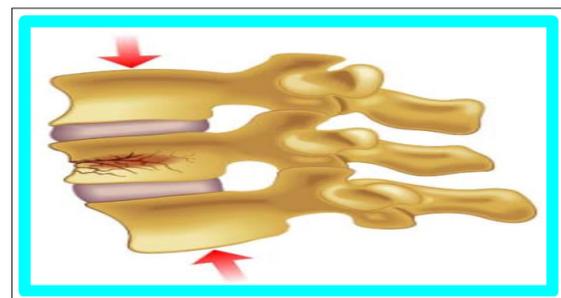


Figure 12: vertebral column fracture

A fracture or dislocation of a vertebra can cause bone fragments to become trapped and damage the spinal nerves or spinal cord. Most spinal fractures occur from car accidents, gunshot wounds, sports, osteoporosis. Fractures and dislocations of the vertebrae, in the injury of spinal cord injury.

The goals of treatment include pain relief, restoration of function, and prevention of future fractures. Benefits of conservative care versus percutaneous vertebral augmentation (kyphoplasty). Patients who choose to pursue conservative treatment will have a greater than 50% chance of sufficient pain reduction, most of which occurs within three months. Prevention of osteoporotic phenomena: use of plastic corsets; gymnastic and rehabilitation exercises of the muscles; strengthening of the muscles; taking antiosteoporotic medications.

Upper femoral end fractures

Upper femoral end fractures are traditionally divided into: intracapsular fractures, femoral neck fractures.

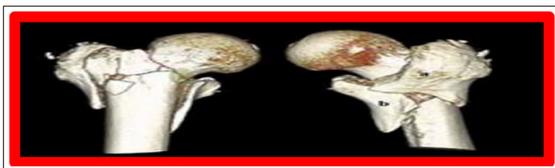


Figure 13: femoral neck fracture

In our series we found: 21-66% Trochanteric fractures and 11-34% femoral neck fractures. Godoy Moirera ironically emphasized: “The patient fell and broke his leg, or broke his leg and then fell”. Advanced osteoporosis greatly thins the walls of the femoral neck and only a small rotation breaks the femoral neck. This author from Mexico called these fractures semi-pathological as a cause of osteoporosis.

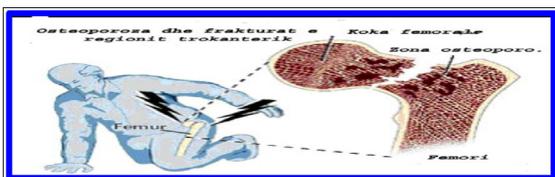


Figure 14: Osteoporosis and fractures of the trochanteric region

A trochanteric fracture is a fracture localized in the area of the trochanteric massif to the base of the femoral neck. The area is predominantly spongy bone where osteoporosis makes it a preferred site for fractures.



Figure 15: femoral fractures in the trochanteric region

A femoral neck fracture is an intracapsular fracture and as such external rotation is limited by the joint capsule. Radiography confirms the diagnosis. Advanced osteoporosis twists the femoral head like an empty eggshell inside out.

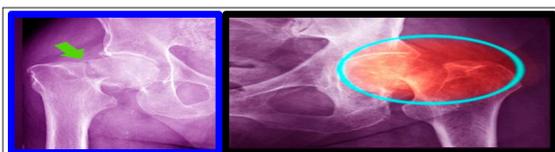


Figure 16: X-ray of femoral neck fractures in cancellous areas

Since cancellous area fractures bear the weight of the body, clinical signs manifest with pain, lameness and require the use of crutches or a cane.

Conclusions

Based on the data obtained from our study, we reached the following conclusions:

1. The treatment of trochanteric fractures, femoral neck fractures and vertebral fractures is well codified today. The problems are completely solvable both in surgical technique and conservative treatment, etc.
2. The application of antiplatelet drugs has significantly reduced thromboembolic complications.
3. The continuation of osteoporosis treatment is a condition for the success of stopping the deepening of osteoporosis [1-13].

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