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Perspective

Fragility Fractures in the Elderly: Risk Factors and Management

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ABSTRACT

Fragility fractures are widespread in the elderly, and they have a significant influence on their quality of life by restricting autonomy, increasing disability, and shortening their lifespan. Different factors contribute to the development of fractures in fragile people. Targeting fragile people before they develop a fracture may be the most difficult problem of all, because current diagnostic technologies have limits. This paper reviews the current information on the management of fragility fractures, including risk factors, prevention, diagnosis, and the actual limitations of clinical therapy choices, as well as proposing new research questions.

Keywords: Fragility; Fractures

INTRODUCTION

In the elderly, fragility fractures are common. Women have a 40-50 percent lifetime risk of osteoporotic fractures, whereas males have a 13-22 percent lifetime risk, with men having a greater fatality rate. Patients over the age of 65 have a higher risk of unfavorable health outcomes, such as restricted mobility, prolonged hospitalization, residual disability, and shorter life expectancy. Frail patients are affected by osteoporosis, which increases the chance of fracture for the rest of their lives. Fragility fractures have a significant financial impact. In the United States, there are more than 2 million osteoporosis-related fractures, with 71 percent of women and 29 percent of males. Clinical practice reflects the rising trend in population ageing and the growing number of elderly persons in Western countries. As a result, osteoporotic fractures and frail individuals have become a pressing concern for healthcare providers. Low-energy trauma in regular activities causes fragility fractures, which usually affect the elderly.

Fragility fractures of the hip and spine, in particular, have the greatest influence on the elderly's health. Fragility fractures can affect many other parts of the body, including the humerus, pelvis, forearm, ribs, distal femur, tibia, and clavicle. The impact of the fracture on quality of life varies depending on the location of the fracture. Hip fractures have serious consequences, with a high 1-year death rate in both sexes and a significant loss of personal independence. Fractures in frail people can be caused by a variety of factors, with osteoporosis being one of the most prevalent. Osteoporosis causes a decrease in Bone Mineral Density (BMD) as a result of severe microarchitectural degradation of bone, resulting in increased fragility. Bone densitometry, also known as mineralometry, is a type of imaging that allows you to analyse and measure the density of your bones with a very low dosage of radiation. Gender plays a factor in fracture risk as well: postmenopausal hormone changes have a deleterious impact on bone quality. Furthermore, females had a higher chance of falling than males, which is an independent predictor of fragility fracture. Falls are another age-related risk that plays a key role in fragility fractures. Falls are highly prevalent among the elderly, yet their probability is frequently overestimated. The related problems are sometimes severe, and the healing process is long and difficult to complete, therefore falls in the elderly have a significant impact on life expectancy.

Diagnostic tools

Targeting frail patients before a fracture occurs has a substantial impact on their survival and is a serious scientific problem. When osteoporotic fractures occur, frail people usually see a doctor or are admitted to a hospital for the first time, and their life expectancy has already been drastically reduced. Indeed, simple radiographs are commonly used for initial patient assessment, with a CT scan or MRI being used. While a CT scan characterises the fracture in all aspects (extension, 3D architecture, articular involvement), an MRI provides more detailed information about the timing of fracture onset, particularly in vertebral fractures, based on the presence of oedema, spinal cord compression, and soft tissue involvement. Bone fragility can now be diagnosed clinically and radiographically using a variety of methods. The primary diagnostic tool for evaluating BMD through particular scores is Dual-Energy X-ray Absorptiometry (DXA). Fragility fractures are predicted by having a low BMD.

Treatments

The treatment of fragility fractures should be tailored to the specific

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needs of each frail patient. A fragility fracture in the elderly is a big difficulty due to the patient's frail nature, a subject with several comorbidities who would need to be managed by a specialised team throughout their important clinical picture. According to certain research, trauma surgeons should collaborate with other professions such as nurses, physiotherapists, occupational therapists, and social workers to provide the best care for these patients. In the treatment of these individuals, the so-called ortho-geriatric comanagement is crucial. When compared to the typical treatment of a single discipline, this has a positive impact on outcomes and costs, especially in proximal femoral fractures. When this technique was implemented, shorter lengths of stay, fewer problems and readmission rates, and improved patient satisfaction were seen. Other disorders, such as peripheral arteriopathy, which affects roughly 20% of senior individuals, can be linked to fragility fractures.

The majority of fragility fractures require surgical treatment, especially when the lower extremity is involved. In most circumstances, patients should be operated on within 24 hours of admission, and no later than 48 hours. Optimizing patient management hours and coordinating pre- and postoperative protocols are consequently critical. When compared to conservative therapy, surgical stabilisation results in a superior degree of function and pain relief for the majority of patients.

In terms of surgery, the contact between bone and implant is the most common location of surgical failure in fragility fractures. This is due to lower BMD, cortical bone thinning, a greater incidence of shredding despite the low-energy damage mechanism, and a longer healing period in osteoporotic bone, which is more brittle and elastic. Biological or synthetic bone grafting, bone cements, or hydroxyapatite coatings are frequently required. To improve contact area and strengthen the implant's anchoring, tricalcium phosphate and Polymethylmethacrylate (PMMA) were utilised. In any case, difficulties such as a lack of integration or the formation of heat during cure, which could be damaging to the surrounding soft tissues, as well as the risk of thermal bone necrosis, could occur.

CONCLUSION

Fragility fractures are a common disorder with major implications for the global health system. Fragility fractures are prevalent, and proper therapy reduces morbidity and health-care costs. Evidence from predicting models also points to the prospect of increased life expectancy, highlighting the urgent need for rigorous health and social sector planning. One of the most important risk factors for the occurrence of fragility fractures is one's age. The key to mastering their treatment, including the use of anti-osteoporosis medications, is prevention. General practitioners should have access to treatment indications, as well as improvements in the standardisation of surgical time. The results of fragile patients benefit from a multidisciplinary approach. Early detection of patients at risk for future fractures in the frail population is critical in preventing future fractures, and this can be accomplished by enhancing communication between general practitioners and orthopaedic surgeons.