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Assessing Appropriateness of Osteoporosis Prophylaxis and Management in Elderly Patients with Intertrochanteric Fractures: A Retrospective Study

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ABSTRACT:

Introduction: Osteoporosis is a prevalent health issue among the elderly, significantly increasing fracture risk and affecting quality of life. Intertrochanteric fractures, common in individuals aged 50 and above, often indicate underlying osteoporosis. Despite international guidelines advocating comprehensive osteoporosis evaluation and management in these patients, adherence varies. This study evaluates the adherence to osteoporosis management practices in elderly patients with intertrochanteric fractures at our institute

Materials and Methods: A retrospective study was conducted on the last 50 patients aged 50 years and above admitted to the Department of Orthopedics, , with intertrochanteric fractures. The study assessed whether these patients received appropriate osteoporosis prophylaxis and management according to established guidelines, which include blood tests for vitamin D, calcium, and phosphorus levels, and the use of anti-resorptive and osteoinductive therapies.

Results: Out of 50 patients, only 12 (24%) received osteoporosis prophylaxis. The study revealed a significant gap in adherence to osteoporosis care standards, with no pre-existing institutional Standard Operating Procedure (SOP) for guiding the evaluation and management of osteoporosis in these patients. This lack of standardized protocols contributes to inconsistent application of best practices.

Conclusion: The study highlights considerable gaps in the evaluation and management of osteoporosis among elderly patients with intertrochanteric fractures. To enhance adherence to care standards, it is crucial to develop and implement institutional SOPs based on international guidelines, increase healthcare provider training, improve patient counseling, and ensure regular follow-up care. Addressing these gaps can reduce the incidence of fragility

fractures, improve patient outcomes, and optimize healthcare resources.

Keywords: Osteoporosis, Intertrochanteric fractures, Elderly patients, prophylaxis

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Introduction

Osteoporosis is a silent but significant health issue that affects millions of individuals worldwide, particularly the elderly population. According to the World Health Organization (WHO), osteoporosis is defined as a skeletal disorder characterized by low bone mass and deterioration of bone tissue, leading to an increased risk of fractures (World Health Organization, 2018). Intertrochanteric fractures, which occur between the greater and lesser trochanters of the femur, are one of the most common types of fractures in individuals aged 50 and above (Kanis et al., 2019). These fractures often indicate underlying osteoporosis, which can lead to further complications if not properly managed. Intertrochanteric fractures account for approximately 15-20% of all hip fractures (Eastell et al., 2016). The incidence rate increases with age, and women are more likely to be affected than men. These fractures can result in significant morbidity and mortality, with many patients experiencing prolonged hospital stays, functional decline, and reduced quality of life (Kanis et al., 2019). Furthermore, intertrochanteric fractures have been associated with an increased risk of subsequent fractures, making it essential to address the underlying osteoporosis.

The IOF recommends that patients aged 50 years and older with intertrochanteric fractures undergo a comprehensive evaluation for osteoporosis (International Osteoporosis Foundation, 2021). This evaluation should include specific blood tests for vitamin D, calcium, and phosphorus levels. Vitamin D is essential for the absorption of calcium from the gut, and insufficient levels can lead to decreased bone density. Calcium and phosphorus are the primary mineral components of bone, and low levels can also contribute to osteoporosis.

Effective management of osteoporosis in individuals with intertrochanteric fractures generally includes the use of anti-resorptive agents and osteoinductive therapies (Kanis et al., 2019). Anti-resorptive agents, such as bisphosphonates, inhibit bone resorption by preventing the activity of osteoclasts. Osteoinductive therapies, such as teriparatide, stimulate new bone formation by activating osteoblasts. Both types of treatments have been shown to reduce the risk of fractures and improve bone density in individuals with osteoporosis (Eastell et al., 2016).

Despite these guidelines, adherence to osteoporosis management practices varies significantly. Factors contributing to non-adherence include lack of awareness, high costs, and perceived side effects or burden of treatment (Kanis et al., 2019). [1-4]To address these challenges, there is a need for improved protocols and awareness campaigns to promote early diagnosis and effective management of osteoporosis in individuals with intertrochanteric fractures. This could include initiatives such as routine screening for

osteoporosis in older adults, educational programs for healthcare providers and patients, and more affordable treatment options.

Case History and Study Findings

Methodology

The retrospective chart review that was performed on the medical records of the last 50 consecutive patients aged 50 years and above admitted to the Department of Orthopedics with intertrochanteric fractures provides valuable insight into the current practices of osteoporosis management in this patient population. The study covered the period between January 1, 2023, and December 31, 2023. Demographic information, including age and sex, comorbidities, vitamin D, calcium, and phosphorus levels at admission, use of anti-resorptive and osteoinductive therapies during hospitalization, and follow-up bone density assessments were collected for each patient.

Results:

The findings of the study were concerning, as only 12 out of 50 patients (24%) received the appropriate osteoporosis prophylaxis, highlighting a significant gap in adherence to established care standards. The underutilization of preventive measures such as anti-resorptive and osteoinductive therapies in older adults with intertrochanteric fractures can result in further complications and increased morbidity. Furthermore, the lack of a pre-existing institutional standard operating procedure (SOP) to guide the evaluation and management of osteoporosis in these patients raises concerns about the quality of care provided to this vulnerable population. It is crucial to implement institutional protocols that promote the evaluation and management of osteoporosis in older adults with intertrochanteric fractures. This could include the development of clinical pathways that incorporate the recommended blood tests for vitamin D, calcium, and phosphorus levels, as well as specific indications for anti-resorptive and osteoinductive therapies. Education and training programs for healthcare providers may also help improve adherence to these guidelines and promote best practices in the delivery of care. Ultimately, addressing the gap in osteoporosis prophylaxis in older adults with intertrochanteric fractures requires a comprehensive, multi-faceted approach that involves collaboration between healthcare providers, administrators, and policymakers. Improving adherence to established guidelines will not only optimize patient outcomes but can also reduce the burden of osteoporosis on patients, families, and healthcare systems

.**Discussion**

Current Standards and Guidelines

International guidelines recommend routine osteoporosis evaluation and management for patients aged 50 years and above with intertrochanteric fractures. This includes blood tests to assess vitamin D, calcium, and phosphorus levels, which are crucial for diagnosing and managing osteoporosis (Kanis et al., 2019). Effective treatment typically involves anti-resorptive agents such as bisphosphonates, denosumab, and zoledronic acid, which help reduce bone resorption and fracture risk. Osteoinductive treatments like teriparatide can also be beneficial for stimulating new bone formation (Eastell et al., 2016). [1,3]However, adherence to these guidelines is often inconsistent.

Study Findings Compared to Existing Literature

The study revealed that only 24% of patients received osteoporosis prophylaxis, which is consistent with other studies highlighting gaps in osteoporosis management. Haque et al. (2020) [5]reported that many patients with fragility fractures do not receive adequate osteoporosis evaluation or treatment, similar to our findings. The lack of institutional SOPs exacerbates this issue, as standardized

protocols ensure consistent application of best practices.

Impact of Osteoporosis Management

Proper management of osteoporosis is crucial for reducing the risk of future fractures. Anti-resorptive agents have been shown to decrease fracture risk by up to 70% in high-risk patients, while osteoinductive therapies like teriparatide can significantly lower the incidence of both vertebral and non-vertebral fractures[6,7]. Ineffective management can lead to repeated fractures, increased morbidity, and higher healthcare costs. Addressing osteoporosis effectively not only improves patient outcomes but also reduces overall healthcare expenditure by preventing subsequent fractures.

Cost-Effectiveness

The cost-effectiveness of routine osteoporosis evaluation and treatment is an important consideration. While initial costs of screening and treatment may be high, these are offset by long-term savings from reduced fracture-related healthcare costs and improved patient quality of life. Kalkwarf et al. (2018) demonstrated [8]that the financial benefits of preventing fractures through osteoporosis management outweigh the initial costs, underscoring the value of comprehensive osteoporosis care.

Barriers to Effective Management

Several barriers to effective osteoporosis management were identified in the study. These include a lack of awareness among healthcare providers about the importance of routine osteoporosis evaluation, inadequate patient counseling, and the absence of standardized protocols. Haque et al. (2020) identified similar barriers, emphasizing the need for improved training and awareness among healthcare providers.

Recommendations for Improvement

Addressing the gap in osteoporosis prophylaxis in older adults with intertrochanteric fractures necessitates a systematic, multi-faceted approach. One essential component is the development and implementation of institutional standard operating procedures (SOPs) based on internationally recognized guidelines, such as those from the International Osteoporosis Foundation (IOF). These SOPs should include protocols for routine blood tests to assess bone health and determine eligibility for anti-resorptive and osteoinductive therapies. Establishing consistent evaluation and management practices will optimize patient outcomes, reduce the risk of future fractures, and decrease the burden of osteoporosis on healthcare systems [8]

Healthcare providers require adequate training to effectively identify patients at high risk for osteoporosis and manage their care. Training should cover the latest evidence-based treatments, including the benefits of anti-resorptive and osteoinductive therapies, and strategies for fall prevention [9]. Provider education will ensure that patients receive appropriate care throughout their journey and help bridge the gap in osteoporosis prophylaxis.

Patient counseling plays a crucial role in enhancing adherence to treatment regimens and promoting overall bone health. Patients should be educated about the risks of fragility fractures, the importance of adherence to treatment plans, and fall prevention strategies (Reference 1). Clear communication and effective counseling will empower patients to actively participate in their care and contribute to better outcomes.

Lastly, regular follow-up appointments are essential for monitoring treatment efficacy, adjusting medications as needed, and reinforcing the importance of ongoing osteoporosis management[9] Providing

consistent care throughout each stage of treatment will help reduce complications, improve patient satisfaction, and ultimately lead to better overall outcomes.

Conclusion

The study highlights significant gaps in the evaluation and management of osteoporosis among elderly patients with intertrochanteric fractures. Implementing a standardized SOP, increasing provider awareness, and improving patient counselling and follow-up are crucial for enhancing adherence to osteoporosis care standards. Addressing these gaps will reduce the incidence of fragility fractures, improve patient outcomes, and optimize healthcare resources.

There are no ethical issues

There is no external financial aid

There is no conflict of interest for any author

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