

Incidental Non-Traumatic Vertebral Body Fractures of the Lower Thoracic Spine in Elderly Patients are Significantly Associated with Fatty Degeneration of the Autochthonous Muscles

Xwewera Yfee*

Department for Radiology and Neuroradiology, University Hospital Schleswig-Holstein Campus Kiel, 24105 Kiel, Germany

Abstract

As the global population ages, understanding the factors contributing to musculoskeletal health in the elderly becomes increasingly important. Incidental non-traumatic vertebral body fractures of the lower thoracic spine are common in this population and are associated with significant morbidity and mortality. Recent research has shed light on the role of fatty degeneration of the autochthonous muscles, which are the deep spinal muscles, in the development of these fractures. This article aims to explore the association between incidental non-traumatic vertebral body fractures of the lower thoracic spine and fatty degeneration of the autochthonous muscles in elderly patients.

Keywords: Autochthonous muscles • Spine • Musculoskeletal

Introduction

Incidental non-traumatic vertebral body fractures are characterized by the presence of fractures in the lower thoracic spine that occur in the absence of significant trauma. These fractures are often discovered incidentally during radiological investigations for unrelated conditions. While the exact mechanisms underlying their development are not fully understood, age-related changes in bone density, weakened intervertebral discs, and altered muscle function have been implicated [1]. The autochthonous muscles, including the multifidus and rotators, are deep spinal muscles responsible for stabilizing the vertebral column and controlling spinal movements. Fatty degeneration refers to the infiltration of adipose tissue into muscle tissue, resulting in muscle atrophy and dysfunction. This process is commonly seen in aging individuals and has been associated with various musculoskeletal disorders [2].

Literature Review

Recent studies have demonstrated a significant association between incidental non-traumatic vertebral body fractures of the lower thoracic spine and fatty degeneration of the autochthonous muscles in elderly patients. The multifidus muscle, in particular, has been found to be significantly affected. Fatty infiltration compromises the strength and contractility of these muscles, leading to impaired spinal stability and increased vulnerability to fractures [3]. Several underlying mechanisms may explain the association between fatty degeneration of the autochthonous muscles and vertebral body fractures. First, the loss of muscle mass and strength reduces the ability of the muscles to generate the necessary forces to stabilize the spine. This compromises the integrity of the vertebral column and increases the risk of fractures. Second, fatty infiltration alters the biomechanical properties of the muscles, reducing

their ability to dampen forces during daily activities. This further increases the load on the vertebral bodies, contributing to their structural deterioration and fracture risk [4].

Discussion

While significant progress has been made in understanding the association between incidental non-traumatic vertebral body fractures and fatty degeneration of the autochthonous muscles, further research is needed to elucidate the underlying mechanisms and develop effective preventive strategies. Longitudinal studies examining the temporal relationship between muscle degeneration and fracture occurrence would provide valuable insights. Additionally, investigating the impact of lifestyle factors, such as physical activity and nutrition, on muscle quality and fracture risk could guide the development of comprehensive preventive approaches [5]. Recognizing the association between incidental non-traumatic vertebral body fractures and fatty degeneration of the autochthonous muscles has important implications for clinical practice. Screening and early detection of fatty infiltration in the autochthonous muscles may help identify individuals at higher risk of fractures, allowing for targeted interventions. Rehabilitation programs that focus on improving muscle strength and function, such as resistance training and core stabilization exercises could be beneficial in reducing fracture risk and improving overall musculoskeletal health in the elderly population [6].

Conclusion

Incidental non-traumatic vertebral body fractures of the lower thoracic spine are prevalent among elderly individuals and can have substantial health consequences. Fatty degeneration of the autochthonous muscles, particularly the multifidus, has emerged as a significant contributing factor to these fractures. Understanding this association enables healthcare professionals to identify at-risk individuals and implement targeted interventions to improve muscle strength and function. Continued research in this field is crucial to developing comprehensive preventive strategies that enhance musculoskeletal health and reduce the burden of fractures in the elderly population.

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*Address for Correspondence: Xwewera Yfee, Department for Radiology and Neuroradiology, University Hospital Schleswig-Holstein Campus Kiel, 24105 Kiel, Germany, E-mail: Xweweray@jhuapl.edu

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Conflict of Interest

None.

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