

A Comprehensive Association between Bone Mineral Density and Incident Dementia

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DESCRIPTION

Dementia, a complex neurodegenerative disorder, poses a significant challenge to public health globally. As researchers continue to explore potential risk factors, recent studies have investigated the intriguing link between Bone Mineral Density (BMD) and the risk of incident dementia. This article aims to provide a comprehensive review of the current scientific literature on this association, analyze the potential connections and implications for preventive strategies.

Bone mineral density and cognitive health

Bone mineral density, a measure of bone strength and integrity, has traditionally been associated with musculoskeletal health. However, emerging evidence suggests a potential interplay between bone health and cognitive function. Several longitudinal studies have investigated the relationship between low BMD and the risk of incident dementia, with some yielding compelling results.

Multiple cohort studies have explored the association between BMD and cognitive decline, often utilizing Dual-energy X-ray Absorptiometry (DXA) scans to measure BMD. These investigations consistently reveal a correlation between lower BMD and an increased risk of dementia.

Mechanisms underlying the association

While the exact mechanisms linking low BMD to dementia remain complex and multifactorial, several hypotheses have been proposed. One plausible explanation is the shared pathophysiological processes between osteoporosis and neurodegeneration. Both conditions may share common risk factors, such as age, inflammation, and hormonal changes, which could contribute to the observed association.

Furthermore, vitamin D, essential for bone health, has also been implicated in cognitive function. Deficiencies in vitamin D have been linked to both low BMD and an increased risk of

dementia. The intricate relationship between bone metabolism, vitamin D, and cognitive health warrants further investigation to delineate the specific pathways involved.

Potential clinical implications

Understanding the association between BMD and incident dementia has potential clinical implications. Early identification of individuals with low BMD could serve as a marker for heightened dementia risk, prompting proactive interventions. Furthermore, strategies aimed at promoting bone health, such as adequate calcium and vitamin D intake, may have broader implications for cognitive well-being.

Preventive strategies

As research progresses, identifying modifiable risk factors becomes important for developing preventive strategies. Lifestyle interventions, including regular weight-bearing exercises and a balanced diet rich in nutrients essential for bone health, may play a role in maintaining both skeletal and cognitive health.

Additionally, the management of conditions such as osteoporosis may have implications beyond bone health. Treating osteoporosis effectively could potentially mitigate the risk of dementia in susceptible individuals. However, further interventional studies are required to establish the efficacy of such approaches definitively.

Limitations and future directions

Despite the growing body of evidence, it is essential to acknowledge the limitations of current research. The majority of studies are observational, and establishing causation remains a challenge. Confounding variables, such as comorbidities and medication use, may influence the observed associations. Future research should prioritize longitudinal studies with robust methodologies to elucidate the causal relationship between BMD and dementia.

The association between bone mineral density and the risk of

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incident dementia represents a compelling area of research. The consistent findings from longitudinal studies suggest a potential link between low BMD and cognitive decline. Understanding the mechanisms underlying this association and exploring preventive strategies are critical for addressing the complex

interplay between skeletal and cognitive health. As research in this field continues to evolve, healthcare professionals may gain valuable insights into new avenues for dementia prevention and management.