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Evidence of Effectiveness of Anti-Osteoporotic Medications and/or Vitamin D or Calcium Supplementations on Bone Health in Patients With NMD: A Systematic Review

Topic: Pharmacological Agents

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BACKGROUND

Neuromuscular diseases (NMDs) are characterized by a decline in muscle strength, mobility and bone mineral density (BMD). Previously dominant symptoms are now medically treated, and disease progression is slowing thanks to gene therapies or symptomatic therapies. Thus, new complications are emerging, including an increased risk of falls, fragility fractures, and loss of ambulation. As a result, there is growing interest in the proper management of bone health in patients with NMD, indeed multiple studies have explored different therapeutic approaches. This systematic review aims to consolidate the evidence on the effectiveness of various therapies on bone health in patients with NMD.

METHODS

We conducted a systematic review via three databases (PubMed, Embase and Scopus) from inception until May 22, 2024. The search included articles investigating the effects of anti-osteoporotic medications and/or Vitamin D or calcium supplementations on BMD in patients with NMD. The definition of the inclusion and exclusion criteria and the PICO model were used to evaluate eligibility. The protocol was registered in PROSPERO. We used PEDro scale and JBI-QES tool for quality assessment and analyzed data.

RESULTS

Starting from 363 records, 28 were included: six interventional studies, 14 observational, five case reports, and three case series. A total of 687 NMD participants with an age range of 0-70 years old were included. The Duchenne Muscular Dystrophy was the most prevalent condition. Vitamin D and calcium supplementation were the most prescribed treatments, despite not sufficient. The bisphosphonate (BP) most frequently employed was Zoledronate, efficacious in comparison with other BPs in several number of studies, followed by Pamidronate, which gave inconsistent results. Alendronate brought positive results while Denosumab and Teriparatide were used infrequently despite the demonstrated increase of BMD.

CONCLUSION

From our research emerges a lack of data on bone health management and inadequate preventive intervention in NMD population. There is a clear need for a more specific and appropriate therapeutic approach, so focusing on earlier start and biological plausibility of the available anti-osteoporotic treatments seems necessary.

Statement of Disclosures

None

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