The Effect of Epidural Steroid Injections on Bone Mineral Density and Vertebral Fracture Risk: A Systematic Review and Critical Appraisal of Current Literature

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Introduction

Epidural steroid injections (ESIs) are a common treatment for the management of patients with radicular back pain. It is also known that the long-term enteral administration of exogenous steroids disrupts bone health and skeletal micro-architecture

Methods

A systematic and critical review of recent literature was conducted in accordance with PRISMA guidelines

Results

A total of 8 studies were included in the analysis (6 retrospective, 2 prospective). A total of 7233 patients with a mean age ranging between 49 and 74 years and an average follow-up between 6 and 60 months were studied. Steroids that were used included triamcinolone, dexamethasone, and methylprednisolone (MP), with a mean number of injections ranging from 1 to 14.7 and average cumulative dose in MP equivalents between 80 and 8130 mg. A single ESI was shown to decrease BMD as measured at the femoral neck by 1.8%, and increase the risk of vertebral fracture by 21%. Significant reductions in BMD were associated with a cumulative MP dose of 200 mg over a one year period and 400 mg over three years, but not in doses of less than 200 mg of MP equivalents for postmenopausal women and at least 3 g for healthy men. The risk of osteopenia and osteoporosis was lower in patients that were receiving anti-osteoporotic medication during the treatment course

Conclusions

ESIs can decrease BMD, both locally (lumbar spine) and systemically (femoral neck) and increase the risk of vertebral fracture. Therefore, ESIs should be recommended with caution, especially in patients at risk for osteoporotic fractures, such as women of postmenopausal age. Anti-osteoporotic medication might be considered prior to ESI.

Learning Objectives

ESIs should be recommended with precaution, in the right circumstances and after thorough review of the patient's history.

References

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