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EDITORIALS

No more vetebroplasty for acute vertebral compression fractures?

Fresh evidence shows no benefit for fractures under 9 weeks old

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Vertebral compression fractures associated with osteoporosis can cause acute pain. Long term, these fractures can lead to deformity, respiratory problems, and loss of height.[1] The increased kyphosis causes problems with mobilisation, eating, sitting, sleeping, and looking forward.

Previous studies have reported conflicting results on the effectiveness of treating acute osteoporotic compression fractures with percutaneous injections of bone cement.[2] Vertebroplasty—the injection of acrylic bone cement into fractured vertebrae—was first performed in France in 1984. Initially designed to treat painful tumour deposits, vertebroplasty for osteoporotic compression fractures became more widespread in the United States in the 1990s. Its use expanded throughout the world. Since then, vertebroplasty has been at the centre of a longstanding controversy about benefits, risks, and cost effectiveness.[3]

In a linked article, Firanescu and colleagues (doi:10.1136/bmj.k1551) report a well constructed randomised trial of 180 older adults with 1-3 painful vertebral compression fractures of up to six (later nine) weeks' duration.[4] The findings confirmed that vertebroplasty is no more effective for pain relief than local anaesthetic injections into the same area (the sham procedure given to controls). Vertebroplasty had no effect on quality of life or on disability. All outcomes were measured over 12 months. The authors did not recruit an untreated control group, so both treatments are potentially better than nothing for pain relief. If so, local anaesthetic injections seem cheaper, are likely safer, and equally beneficial.

This trial suggests that vertebroplasty should not be offered to patients with three or fewer painful osteoporotic vertebral fractures of less than 6-9 weeks' duration. A recent Cochrane review confirms this finding.[5] This trial does not, however, inform the treatment of patients with pain that persist longer than nine weeks, and the reasons for persistence might be multifactorial. But for most patients with fragility fractures, the initial treatment is conservative; even those with severe pain normally improve within six weeks. The complications of vertebroplasty are rare but potentially catastrophic. Patients may experience spinal cord injury or pulmonary embolism from cement leakage at the time of the procedure.[6 7]

Fragility fractures cause deformity as well as pain and seem to be associated with an increased mortality from respiratory disease.[8] Importantly, no long term trials have evaluated whether vertebroplasty performed at any stage improves long term outcomes such as deformity and mortality when combined with medical treatment of osteoporosis. Increased mortality associated with vertebral fragility fractures might be due to increased risk of fractures at other sites such as the hip. Adults with vertebral fracture often have poor overall health, and a surgical intervention in isolation is unlikely to change prognosis.

Even so, not treating the spinal deformity associated with fragility fractures might be associated with a higher mortality in the long term. Although vertebroplasty does not seem to be any more beneficial than local anaesthetic in the acute management of spinal pain, it remains to be seen whether improving and preventing progressive spinal kyphosis is associated with an improvement in long term quality of life and disability.[9] Cement augmentation for patients with multiple myeloma or those near the end of life with vertebral metastasis should be considered separately, as good evidence shows that vertebroplasty reduces pain in these conditions.[10-12]

The trial by Firanescu and colleagues gives patients, caregivers, and providers reliable information about the place of cement augmentation in the management of acute osteoporotic vertebral fractures. However, questions remain on its place in the management of chronic painful fractures, and, more specifically, whether cement augmentation has any role in the prevention of long term morbidity and mortality. These are fruitful areas for further research but require well constructed trials looking at all aspects of care in this patient group.

Future trials should take full account of the comorbidities that often accompany osteoporotic vertebral fractures in older patients. All too often surgeons and radiologists consider the fracture as an isolated injury rather than part of a bigger and much more complex picture of compromise that caused the fracture in the first place.

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UK guidance from the National Institute for Health and Care Excellence on osteoporotic vertebral compression fractures states that percutaneous vertebroplasty and kyphoplasty should be offered only to people with severe ongoing pain after a recent unhealed vertebral fracture despite optimal pain management, and whose pain has been shown to be at the level of the fracture by physical examination and imaging.[13] Firanescu and colleagues' trial suggests that early vertebroplasty—before nine weeks—should probably be considered only in exceptional circumstances for patients with vertebral osteoporotic fractures.

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