Use of Vetebral Augmentation in Osteoporotic Compression Fractures

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Story from the Front Lines

A man in his 70s with a past medical history of only hypertension presented to the emergency room for sudden onset back pain after driving his truck over a bumpy road. He was found to have multiple thoracic vertebral compression fractures consistent with osteoporotic fragility fractures. He was admitted for pain control and for treatment of the mild rhabdomyolysis he sustained while unable to get up for several hours prior to calling an ambulance. He was initially treated with intravenous opioid medication for pain management, and on the third day of his admission he underwent vetebroplasty of the affected vertebra.

Two days later, he was transferred to our facility for ongoing management and placement in a rehab facility. He did well on a regimen of NSAIDs and acetaminophen and opioids were stopped. His rhabdomyolysis resolved without complication. He was started on a bisphosphonate after review of his imaging showed that he had most likely not sustained a pathologic fracture. He worked with physical therapy during his admission and was discharged to a rehab facility where he stayed for several weeks prior to returning home.

Teachable Moment

The management of acute osteoporotic vertebral fractures has been studied extensively over the last few decades. Patients are typically selected for operative management if they have failed conservative therapies, either acutely (unable to wean off intravenous pain medication) or long term (uncontrolled pain months after the fracture). There have been multiple studies comparing operative management with conservative management and the results are mixed.

A systematic review of eight trials comparing vertebral augmentation with placebo or standard medical care showed that both intervention and control groups had significant improvements in pain at 1, 3 and 12 months. For the six trials in this review that did not use a sham procedure, the reduction in pain at one month only was better in the augmentation group. In the two studies that used a sham procedure as a control, there was no shown benefit of augmentation compared to placebo[1]. Subsequent reviews have shown similar findings, in which trials conducted with a sham procedure as a control, there is no benefit to augmentation[2].

There have been several trials looking specifically at vertebroplasty (the reviews above also included kyphoplasty). There have been three trials examining this, and 2/3 found no benefit from the intervention[3, 4]. The third trial, did note a benefit of vertebroplasty compared to the sham procedure [5]. However, all of these trials have been criticized for poor methodological design (small sample sizes, inadequate powering, sponsoring by device manufacturers).

Given that the overall data skews against vertebral augmentation providing any benefit of improved pain, the patient in the above vignette may have been able to defer up front vertebroplasty. Although no specific harm came from his surgery, he certainly was exposed to additional risk for no additional benefit compared to a noninvasive strategy.

References:

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5. Clark W, Bird P, Gonski P, et al. Safety and efficacy of vertebroplasty for acute painful osteoporotic fractures (VAPOUR): a multicentre, randomised, double-blind, placebo-controlled trial. Lancet 2016; 388:1408.