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RESPONSE TO LETTER

The Application of Vertebral Augmentation Procedures and Teriparatide in the Treatment of Osteoporotic Vertebral Compression Fractures [Response to Letter]

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Dear editor

With the attempt to explore a reasonable treatment strategy, we presented the positive effectiveness of teriparatide (TPTD) administration in improving quality of life (QOL) and reducing the incidence of new vertebral compression fractures (NVCFs) after percutaneous kyphoplasty (PKP).[1] Being interested with the comment opinion proposed by Zhou et al, we would like to put forward our views.

Short-term (eg pain relief, restoration of mechanical stability, mobility improvement and fracture healing) and long-term achievements (eg progressive QOL improvement and prevention of NVCFs) need to be realized in strategies for patients who suffered osteoporotic vertebral compression fractures (OVCFs).[2,3]

Vertebral augmentation procedures (VAP), ie percutaneous vertebroplasty (PVP) and/or PKP, is a minimally invasive therapy adopted in the treatment of OVCFs with the aim of prior pain alleviation by stabilizing the vertebral fracture and recovery of function by restoring vertebral body height (VBH).[4] Literature reported that PVP/PKP quickly restored patients' walking ability soon after operation and improved QOL in the early stage of OVCFs.[5] On the other hand, except for the well-known complications induced by surgical procedures,[6] recurrent fractures and the adjacent vertebral fractures are important issues related to VAPs. Logistic regression analysis showed that VAP was a risk factor of vertebra refracture because of increased local vertebral stiffness.[7,8] And this procedure has no contribution to bone healing and the treatment of primary disease, ie osteoporosis. Studies have reported high incidence, up to 21.7%, of new symptomatic compression fractures 1 year after percutaneous vertebroplasty.[9]

Routine therapeutic options in conservative treatment for OVCFs should include bed rest with followed short-term back brace wear and anti-osteoporosis drugs to avoid further pathologic vertebral collapse.[10] As a bone anabolic drug, TPTD exerts positive effects in the treatment of severe osteoporosis, which was acknowledged as another significant risk factor of NVCFs.[7] Although previous studies have already demonstrated TPTD's effects in terms of gradual pain control and health quality recovery in early stage of OVCFs by enhancing bone formation and bone healing,[11] whether this slower method could maintain vertebral morphology is one concern. To lower the risks of pulmonary dysfunction, deep vein thrombosis, muscle atrophy, pressure sores, and

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inhibit further demineralization, time in bed should not be too long, which may predispose to future collapse. Whereas the medium- and long-term effect (more than 6 months) of separate TPTD application in strengthening the fractured vertebrae to be stabilized is proven.[12]

In conclusion, VAP provides the ability of immediate pain alleviation, short-term QOL improvement, VBH restoration and spinal deformity correction,[13] and TPTD administration leads to enhanced acute stage bone healing, reduced progressive collapse and gradual pain relief,[14] which seems more like a complementary effect. In our opinion, supplemental TPTD treatment is highly recommended following a PVP or PKP procedure.

To some extent, we agree with the comment that TPTD could replace percutaneous vertebral augmentation in OVCFs in appropriate patients. As a kind of medical (conservative) option, TPTD should be applied immediately after the phase of fracture begins, rather than after the failure of other conservative methods.[15,16] It should also be noted that for patients with high levels of pain, severe osteoporosis, advanced age, overweight, high modified frailty index (mFI)[17] and intravertebral cleft (IVC), VAP with subsequent TPTD treatment are mostly considered appropriate, since these are risk factors of the failure of conservative treatment of acute OVCFs.[2,18] In general, studies reporting that the conservative treatment strategy of TPTD obtained similar therapeutic effects with VAP in the treatment of acute OVCFs are limited,[11] and more research is needed, including more clearly defined participant selection criteria and study protocols.

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Disclosure

The authors report no conflicts of interest in this communication.

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