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Case Report

Teriparatide and vertebral fracture healing in Ankylosing Spondylitis

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ABSTRACT

Summary: Patients with Ankylosing Spondylitis (AS) are four times more likely to sustain spinal fractures. Due to the associated risk of neurological complications treatment is complex.

We present the case of a 56-year-old Caucasian gentleman with AS who sustained a fracture of T2 vertebra following a traumatic hyperextension injury. He declined surgery in fear of complications and started treatment with subcutaneous Teriparatide at a dose of 20 mg daily for six months.

There was complete healing of the vertebral fracture at 6 months without any complications.

This case is unique as complete healing was achieved without preceding surgical intervention. Further exploration of the use of Teriparatide in spinal fractures in patients with AS is recommended to support the theories generated by this and other existing cases in the literature.

Introduction

Ankylosing Spondylitis (AS) is a chronic inflammatory condition typically affecting the joints of the axial spine and less commonly the peripheral skeleton. Typical features of advanced disease is fusion of the sacroiliac joints and vertebral bodies leading to generalized stiffness and irreversible loss of spinal movement[1].

The biomechanical instability secondary to multilevel bony fusion and osseous spurring can lead to vertebral fractures[2]. These fractures can be unstable due to ossification of the supportive soft tissue and may lead to primary or secondary neurological deficit [3]. The majority of fractures in AS are the result of low grade traumatic events. The cervical and lumbar spine are predominantly affected[4].

Management of cervical fractures in AS is often complex with associated risks of neurological complications and radiographs may be difficult to interpret due to pre-existing osseous changes, kyphosis and high-riding shoulders[5].

A systematic review of the literature showed that delayed diagnosis can lead to 67.2% of AS patients sustaining neurological deficit and surgical complication rates can be as high as 51.1%. Overall mortality was 17.7% at three months and considerably worse compared to the general population[6]. AS patients are 11 times more likely to sustain a spinal cord injury following a vertebral fracture[7]. Despite these complications the recommended treatment is surgical fixation to achieve fracture reduction and healing with minimal loss of mobility. Choosing conservative management as an alternative with halo orthosis immobilisation also carries a high risk of pseudo-arthrosis. Moreover regardless of the approach the possibility for non-union remains significant.

A novel conservative management for bone fractures is Teriparatide (Forsteo, Eli Lilly & Co Ltd, Liverpool, England), a

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recombinant human parathyroid hormone (PTH 1-34)[8]. It is a subcutaneous injection that at a daily dose of 20 micrograms is indicated for the treatment of osteoporosis in postmenopausal women[9]. It has also been approved by the National Institute for Health and Care Excellence as primary prophylaxis in high-risk male population and corticosteroid induced osteoporosis. There are reported cases of Teriparatide healing osteoporotic fractures. Accelerated bone healing was observed in patients with bilateral sacral stress fractures [10] and lower leg fractures [11]. It has also shown beneficial effects in a patient with AS following a failed surgical intervention [12].

Clinical case

We present the case of a 56 year-old Caucasian man diagnosed with AS in his early thirties. He was born in the UK and lived in the Philippines for five years before returning to the UK. He works as a fabricator welder which involves a significant amount of manual work. He first presented to our Rheumatology Outpatient Clinic in 2011 with a 20 year history of Ankylosing Spondylitis. At the age of 17 he suffered a motorcycle accident and sustained skull, right femoral fractures and pneumothorax. He had a 10-pack-year smoking history, no significant alcohol or drug consumption and a medical history that was unremarkable for chronic medical conditions. At his initial visit he had a Bath Ankylosing Spondylitis Activity Index (BASDAI) score of 8.0, a Spinal Pain VAS score of 8 and reported two episodes of uveitis. He failed three anti-inflammatory medication, namely Indomethacin, Naproxen and Etoricoxib at recommended doses for the management of inflammatory spondylarthropathies. He was then initiated on an IL-17 inhibitor, as biological therapy started to become a recognised and safe treatment option for patients with inflammatory arthropathies.

He had a good therapeutic response to the anti-IL-17 monoclonal antibody, Secukinumab (Cosentyx, Novartis Pharmaceuticals,

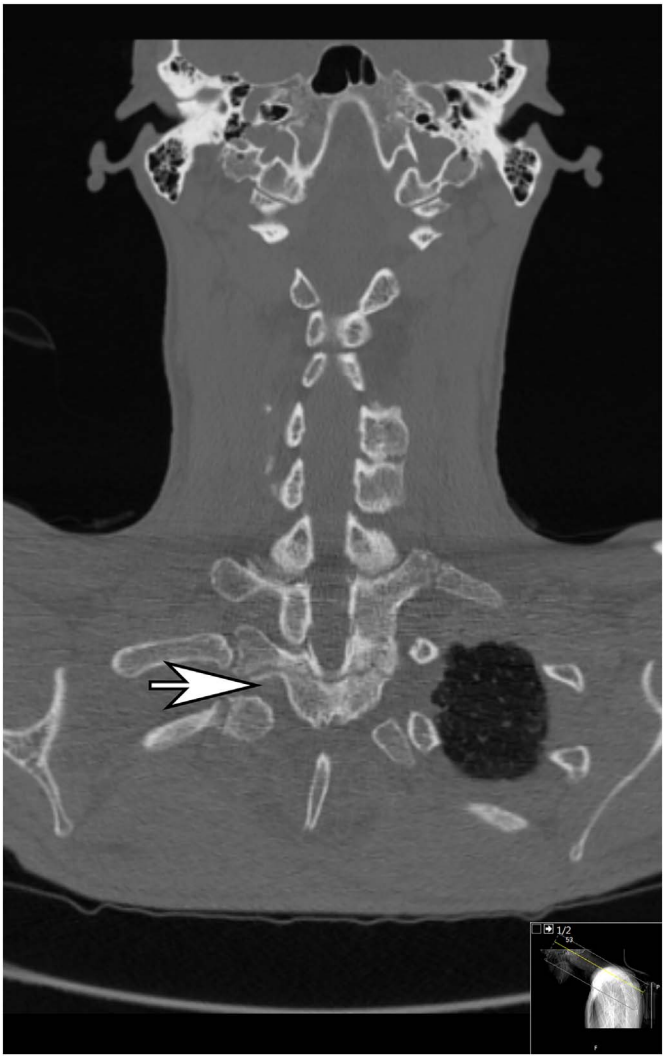

Fig. 1. Three column fracture of T2 vertebra in Ankylosing Spondylitis. Coronal view.
T2 vertebral fracture in a patient with Ankylosing Spondylitis. Sagittal view.