

The diagnosis of neglected burst fracture of C7 in a patient with ankylosing spondylitis

Case report

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ABSTRACT

Aim: A case of a patient with ankylosing spondylitis who sustained a fracture of C7 after a fall is presented.

Material – Method: A male patient 61 years old with a history of ankylosing spondylitis for thirty years sustained a head and neck injury after a fall and was transmitted to the emergency department of a general hospital. In clinical examination had a GCS score 15 with no findings in neurological examination. In X-rays of the cervical spine no evidence of fracture were recognised. The patient for the next three months complained for neck pain and numbness of the upper arms. In clinical examination he had localised tenderness in the lower cervical spine without clinical findings in neurological examination. After X-ray control and MRI of cervical spine a burst fracture of the C7 vertebra was recognised. The patient was treated with a cervical collar Philadelphia type.

Results: Five months after the initial injury the patient had significant improvement of his symptoms with reduction of pain and numbness. In X-ray control the fracture was healed. Six months after the initial injury the patient has no symptoms.

Conclusions: The patients with ankylosing spondylitis sustain easily fractures due to osteoporosis and altered biomechanics of spine even after a minor trauma. In cervical spine fractures often involve the C6-C7 vertebra and usually are three column unstable fractures. Diagnosis is often delayed due to the site and ankylosis of cervical

spine which make difficult the recognition of fractures in conventional X-rays.

Key words: *ankylosing spondylitis, fracture cervical spine.*

AIM

Ankylosing spondylitis is a chronic inflammatory disease of unknown cause which belongs to seronegative spondyloarthropathies and affects the axial skeleton. The frequency of the disease is 0,02-0,23%. Ninety percent of the patients are positive to HLA-B27 antigen^{1,2,3}. The first clinical presentation of the disease is sacroiliitis followed by involvement of spine. In the spine the disease is characterized by ossification of ligaments, intervertebral discs and ankylosis of facet joints, with formation of syndesmophytes⁴. The result of this process is a progressive stiffness and deformity of the spine¹¹. The most serious complication in advanced disease is a vertebral fracture which occurs even after a low energy trauma, because of osteoporosis and altered biomechanics of spine^{4,5,6}. Cervical spine is most frequently injured⁵. Due to altered biomechanics fractures occur in cervicothoracic junction¹².

The aim of this study is to inform doctors about the possibility to have this serious complication in patients with ankylosing spondylitis even after a minor trauma.

MATERIAL - METHODS

A mail patient 61 years old with a history of ankylosing spondylitis for thirty years and ankylosis of the spine sustained a head and neck injury after a fall. The patient was transmitted to an emergency department of a general hospital. In clinical examination he had a trauma in the head GCS: 15 with no findings in the neurological examination.

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The X-rays of the neck and head were negative for fracture. The patient discharged from the emergency department with instructions. For the next three months the patient complained for pain in cervical spine and numbness of the upper arms. A new clinical examination three months later revealed local tenderness in lower cervical spine with kyphotic deformity of cervical spine and restriction of movements. No clinical signs were found in neurological examination. Conventional radiographs revealed findings of advanced ankylosing spondylitis, but C7 vertebra was not visible in X-rays (see picture 1).

Because of the history and clinical findings which strongly suggested a possible fracture an MRI of cervical spine was performed. Indeed a burst fracture of C7 vertebra was diagnosed, with involvement of the anterior and middle column, tear of the posterior longitudinal ligament and posterior displacement of bone fragment into spinal canal without injury of the spinal cord (see pictures 2-9).

RESULTS

The patient was treated in a Philadelphia collar for six weeks. Then he had a new X-ray control in frontal and sagittal plane, flexion and extension views with traction of the shoulders in order to be visible the C7 vertebra. The X-ray control revealed that the fracture was healed and no findings of instability existed in C6-C7 level (see pictures 10, 11). In clinical examination the patient has significant improvement with reduction of pain and numbness. Six months after the initial injury in a new clinical and radiological examination the patient has no symptoms and the fracture has healed.

DISCUSSION

Patients with advanced ankylosing spondylitis are prone to fractures in lower cervical spine even after a minor trauma^{4,5,6,9}. The frequency of fractures in cervical spine in patients with ankylosing spondylitis is 3.5 times greater than in general population¹⁰. Fractures are unstable three column and usually are associated with injury of the spinal cord⁹. In our case it was a burst fracture of the body of the C7 vertebra with participation of the anterior and middle column without neurological damage acute or delayed and without instability as we can see in flexion and extension views so conservative treatment was chosen. Sixty six percent of fractures-dislocations of the ankylosed spine are associated with spinal cord injury and mortality rate is 40%¹³. Neurological damage may be acute or delayed due to progressive kyphotic deformity¹⁴. Diagnosis of the fracture is often delayed. Milicic reports that in 41.67% of the cases the fracture were not recognized initially and 16.67% had neurological deterioration⁸. Finkelstein suggests as possible reasons for the delay in diagnosis the following: distortion of the anatomy due to the disease, ossification of ligaments of the spine, osteoporosis, a history of minor

trauma, lack of displacement, and difficulty in visualizing cervicothoracic junction². In our case the delay in diagnosis reached three months and possible reasons are the fact that C7 vertebra was not visible and the findings of advanced ankylosing spondylitis which made difficult the evaluation of the initial radiographs.

MRI seems to be better than conventional radiographs in diagnosis and evaluation of the severity of the fracture⁹.

The decision for surgical or conservative treatment of the fractures depends from the location of the injury, level of involvement (single or multiple), the time of diagnosis (early or delayed), structures involved, stability, displacement, compression of spinal cord or spinal stenosis. Stable fractures nondisplaced or minimally displaced can be managed conservatively with a brace⁹.

Surgical treatment traditionally resulted in high morbidity rates⁵. With improvements made to instruments the last years the morbidity has reduced significantly. The majority of these fractures is nowadays managed surgically with anterior, posterior approach or a combination of these, decompression with laminectomy, spinal fusion (anterior posterior, or combination), with or without osteotomy for deformity correction^{4,9}.

CONCLUSIONS

Patients suffering from ankylosing spondylitis are prone to cervical spine fractures due to osteoporosis and altered biomechanics, even after a minor trauma. Early diagnosis of fractures is significant for proper treatment. Sudden presentation of pain in cervical or thoracolumbar region and the history of injury even low energy in a patient with advanced ankylosing spondylitis must alert the physician for the possibility of fracture. In cervical spine fractures are usually unstable three - column and involve C6-C7 vertebra. Diagnosis is often delayed due to the site of the lesion (C6-C7) and ankylosis of cervical spine which make difficult the recognition of fractures in conventional radiographs.

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