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OLGU SUNUMU / *CASE REPORT*

A VARIANT OF TYPE IIA HANGMAN'S FRACTURE WITH POSTERIOR ANGULATION RESULTING FROM EXTENSION-DISTRACTION INJURY: CASE REPORT

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SUMMARY

Type IIA Hangman's fracture results from fiexion-distraction injury and shows severe angulation with minimum displacement. In this study, A variant case of type IIA hangman's fracture resulting from extension-distraction injury with posterior angulation is presented and discussed. Type IIA Hangman's fracture may result from extension-distraction injury and severe angulation of C2 may be posterior instead of being anterior as in its original description.

Key Words: *Hangman's fracture, extension-distraction injury, type IIA*

ÖZET

Tip IIA Hangman kırıkları fleksiyon-distraksiyon yaralanması sonrası oluşur ve deplasman olmaksızın belirgin açılanma olmasıyla karakterizedir. Bu çalışmada ekstansiyon-distraksiyon yaralanması sonrası oluşan ve belirgin posterior açılanma gösteren bir Hangman kırığı olgusu sunulmakta ve tartışılmaktadır. Tip IIA hangman kırıkları ekstansiyon-distraksiyon yaralanması sonucu da oluşabilmekte ve C2'nin açılanması posterior yönelimli de olabilmektedir,

Anahtar Kelimeler: *Hangman kırığı, ekstansiyon-distraksiyon yaralanması, tip IIA*

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INTRODUCTION

Hangman's fracture, named by Schneider et al[8] in 1965, accounts for 4-20 % of all cervical spine fractures[3,7, 10,11]. It is characterised by bilateral avulsion fracture through pars interarticularis and there may be disruption of the C2-3 disc bond and anterior dislocation of axis on C3 body in combination[4,7,9-11]. Hangman's fracture of the axis was classified by Effendi et al[2] as Type I, II and III. Classification was modified by Levine and Edwards[4] with additional Type IIA consisting of fiexion-distraction injuries causing minimum displacement but significant anterior angulation of C2 appearing as hinging from anterior longitudinal ligament.

Here we report a variant case of Type IIA Hangman's fracture resulting from extension-distraction injury with significant posterior angulation without translation and an unusual extension of fracture to axis body and both transverse foramens.

CASE REPORT

An 85-year-old man was admitted to the emergency department after a traffic accident. No neurological deficit was found in his neurological examination, The patient was immobilised with rigid cervical collar and a significant posterior angulation of 26 degrees was detected between C2 and C3 (Figure-1A) on lateral cervical plain radiography and computerised tomography (CT) scans was taken immediately. CT scans showed a fracture of the right pars interarticularis (Figure-1B) and the left pars interarticu-

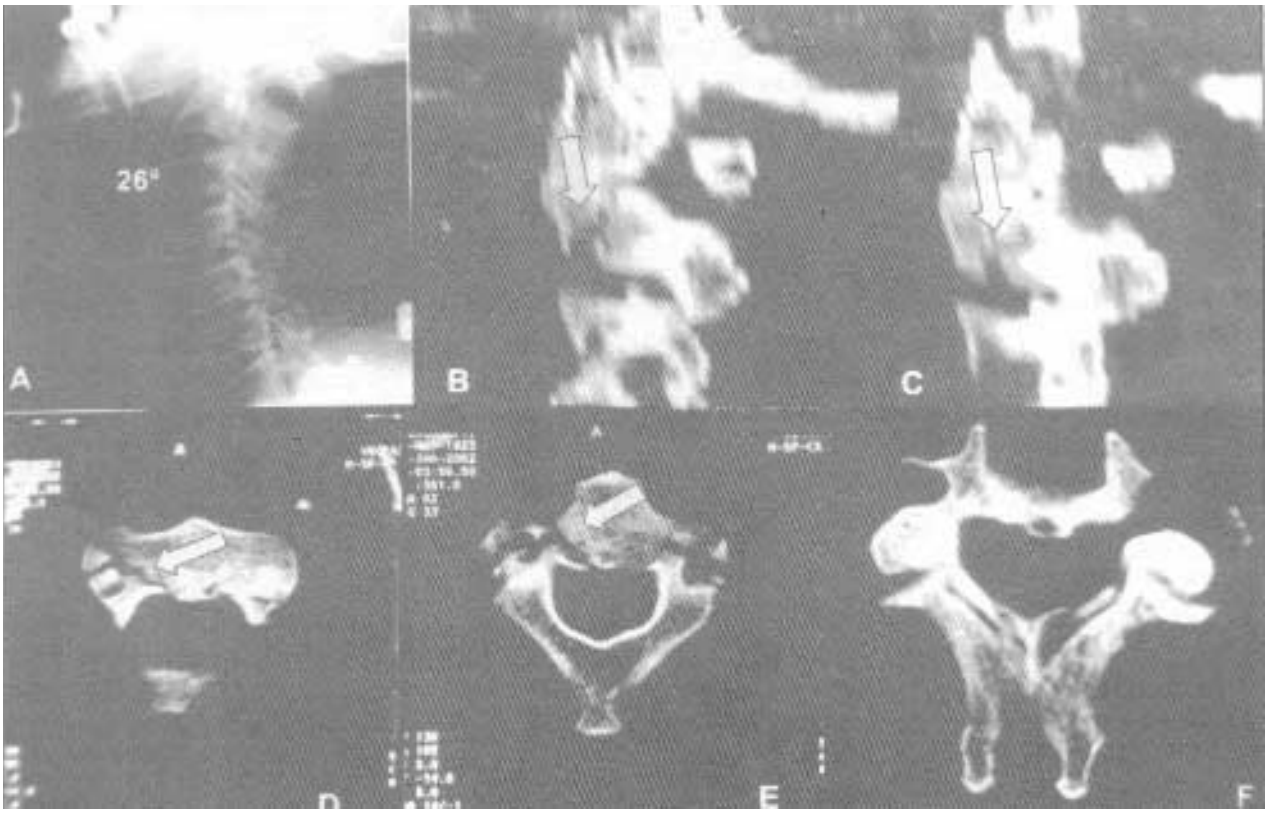

Figure I. Lateral plain radiography of the patient showing significant posterior angulation (26°) between C2 and C3 (Figure 1A). CT scan of him shows fracture of right pars interarticularis (Figure 1B) and left pars interarticularis (Figure 1C) together with the involvement of C2 body on the right (Figure 1D) and both transverse foramen regions (Figure 1E) atypically and subluxation of C2-3 facet joints bilaterally (Figure 1F).

laris (Figure-1C) together with the involvement of C2 body on the right (Figure-1D) and both transverse foramen regions and subluxation of C2-3 facet joints bilaterally (Figure-1F).

Because of aggravated chronic cardiac and pulmonary insufficiency, the patient was intubated carefully and treated in the intensive care unit due to cardiac and pulmonary problems with rigid cervical collar immobilisation. He died five days after the accident due to cardiac and pulmonary problems. No neurological problem due to Hangman's fracture developed at that time.

DISCUSSION

Hangman's fracture of the axis was classified initially by Effendi et al[2] and modified by Levine and Edwards[4] as Type I, II, IIA and III. They also suggested a correlation between the fracture type and the mechanism of the injury; Type I injuries results from hyperextension-axial loading force; type II injuries, from an initial hyperextension-axial loading force followed by severe flexion; type IIA injuries, from flexion-distraction; and type III injuries from flexion-compression. According to Edwards and Levine[4] the modification of Hangman's fracture classification of Effendi et al, Type I injuries have a fracture trough of the neural arch with no angulation and as much as three millimetres of displacement, type II ones have significant anterior angulation and displacement, Type IIA fractures show minimum displacement but significant anterior angulation appears as hinging from anterior longitudinal ligament and type III ones have bilateral facet dislocation between the second and third cervical vertebra with a fracture of the neural arch. Type IIA Hangman's fracture as defined by Edwards and Levine[4] results from an injury mechanism causing flexion-distraction. The above case of Hangman's fracture shows significant angulation as in type IIA without translation but posteriorily. The mechanism of injury is extension-distraction because of the posterior angulation. As reported by Effendi[2] et al, in Type II Hangman's fractures C2 can displace anteriorly, posteriorly or be without displacement. So this case of Hangman' s fracture resulted from a different mechanism, extension-distraction instead of flexion-distraction, but must be classified in Type IIA category. This Hangman's fracture case had fracture through the left and right pars interarticularis and the right one extended to the posterior portion of the axis body and involved both transverse foramens atypicaly. Involvement of axis body and transverse foramen in Hangman's fractures is rare and there were only a few cases presented in literature [1,5,6,9].

In conclusion, type IIA Hangman's fracture may result from extension-distraction injury and the angulation of C2 may be posterior instead of being anterior.

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