CASE REPORT

Isolated sacral dislocation in a 4-year-old child

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drmustafaisik@yahoo.com**SUMMARY**

Sacral dislocation is an uncommon form of injury in childhood. A 4-year-old girl who was injured in a motor vehicle accident was seen in the emergency room. On physical examination, ecchymosis and tenderness in the abdomen and sacral region was identified. Radiographs revealed no pelvic pathology. CT was performed owing to the patient's sacral and abdominal tenderness. Dislocations were identified at the sacral third and fourth vertebrae without any fractures. The patient was discharged 10 days later with a recommendation for 6 weeks bed rest and an appointment for an outpatient follow-up examination. At the post-traumatic second-month examination, the patient was walking normally. In the radiograph and MRI that were taken a year later, the dislocation was observed to have fused completely, and no pressure was seen on any anatomical structure. No functional pathology was identified during the interview with the family

BACKGROUND

Although sacral dislocation with pelvic fractures is seen in adults, it is an unexpected injury in children. We would like to share our case, which is the second in literature. Emergency doctors and orthopaedic surgeons should be careful in such rare cases.

CASE PRESENTATION

A 4-year-old girl who was injured in a motor vehicle accident was seen in the emergency room. On physical examination, ecchymosis and tenderness in the abdomen and sacral region was identified. The neurological examination of both lower extremities was normal. There was no urinary or anal incontinence.

INVESTIGATIONS

Radiographs revealed no pelvic pathology. There was only a non-displaced fracture at the distal part of the right fibula. In the CT that was performed owing to the patient's sacral and abdominal tenderness, a type 1 laceration was detected in the liver. Dislocations were identified at the sacral third and fourth vertebrae without any fractures (figure 1).

DIFFERENTIAL DIAGNOSIS

In differential diagnoses, sacral fractures, and associated other pelvic injuries should be considered.

TREATMENT

The patient was followed up at the paediatric surgery clinic for liver laceration. No pathologies were observed during the clinical follow-up. No intervention was performed for sacral dislocation,

and a conservative treatment approach was followed.

OUTCOME AND FOLLOW-UP

The patient was discharged 10 days later with recommendation for 6 weeks bed rest and an appointment for an outpatient follow-up examination. At the post-traumatic second-month examination, the patient was walking normally without any clinical symptoms. In the radiograph and MRI that were taken a year later, the dislocation was observed to have fused completely, and no pressure was seen on any anatomical structure (figures 2 and 3). No functional pathology was identified during the interview with the family.

DISCUSSION

Sacral injuries are rarely observed on their own during childhood. They are generally known to accompany pelvic injuries.^{1–3} Data from the literature are very limited in this issue. In a PubMed literature review, we were able to find only one case of isolated sacrum dislocation in a child.⁴ To the best of our knowledge, our case is the second to be published.

Sacral injuries might sometimes be difficult to diagnose, and some of the injuries might be overlooked especially in children. Radiographs might be

Figure 1 MRI view of sacral dislocation.

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Figure 2 Control radiological view.

insufficient for diagnosis. In our case, sacral dislocation could not be fully seen in the radiographs taken at the emergency room. In addition, transverse sacral fractures and isolated dislocations sometimes may be overlooked even in CT. For this reason, it is necessary for the sagittal sections to be examined

Figure 3 Control MRI view.

together with axial sections during CT. The most beneficial method for confirming diagnosis is MRI.⁵ For this case, sacral dislocation was clearly observed in CT, which was obtained to clarify the abdominal injury, and MRI. Sacral plexus is easily damaged in sacral injuries. A source of concern with these injuries is the possibility of damage to the sacral nerve roots, which can lead to pathologies in the bulbocavernosus reflex and anal and urethral sphincters.⁶ The first anatomic classification of sacral fractures was performed by Denis *et al.*⁷ According to this classification based on the anatomic localisation of the fracture, fractures associated with spinal channel are classified as type III. Since dislocations are directly related to the spinal channel, they are also considered as type III injuries.

According to Denis *et al.*,⁷ the incidence of neurological deficit in this type of injury is 58%. However, it is difficult to provide statistical data for this type of rare injury in children. Schmidek⁸ reported neurological deficits associated with sacral fractures. Contrary to what was expected, the anal sphincter, urethral sphincter and bulbocavernosus reflex examinations were normal in our patient, both during the initial and the follow-up control examinations.

The treatment of sacral fractures is still a matter of debate in the literature.⁹ However, no particular surgical treatment has been reported for sacral dislocations. Unless there is a neurological deficit present together with the sacral fracture, the conservative treatment is recommended especially for small children and adolescents.¹⁰ Some have suggested reduction in girls, since sacral fracture injuries might later complicate vaginal delivery.¹¹ However, it is considered that the remodelling ability in children would prevent such complications.¹² Since the dislocation in our patient was on the posterior side, it was considered that such complications are not to be expected. We do not recommend any interventions for reduction in sacral dislocations without neurological deficits; since they do not innervate any tissue on their own, damage to the S3 and S4 roots which may not be recognised clinically.¹³ In addition, a risk of iatrogenic injury to the sacral plexus is always present during open and closed reduction manoeuvre. The absence of any pathology during the follow-up of our patient supports our decision on this subject.

In conclusion, sacral injuries are quite rare in children. No isolated dislocation in the sacrum has been identified before. Sacral injuries should be considered in abdominal and pelvic injuries, neurological examinations should also be performed accordingly, and the region should be evaluated by a CT with sagittal sections and MRI. Children with sacral dislocation without any neurological deficit can be treated conservatively.

Learning points

- ▶ Sacral dislocations or fractures may be seen in adults.
- ▶ Isolated sacral dislocation is an uncommon injury in children.
- ▶ Neurological examination should be performing in such cases for anal functions.
- ▶ Orthopaedic surgeons should be careful while they are managing children after motor vehicle accident.

Competing interests None.

Patient consent Obtained.

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