UNCOMMON BUT IMPORTANT INFLECTED SKELETAL INJURIES

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SPECIFICITY OF RADIOLOGIC FINDINGS

**High Specificity**
- Classic metaphyseal lesions
- Rib fractures, especially posterior
- Scapular fractures
- Spinal fractures

**Moderate Specificity**
- Multiple fractures, especially bilateral
- Fractures of different ages
- Epiphyseal separations
- Vertebral body fractures and subluxations
- Digital fractures
- Complex skull fractures

**Common, but Low Specificity**
- Subperiosteal new bone formation
- Clavicular fractures
- Long bone shaft fractures
- Linear skull fractures

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PATTERNS OF INJURY AND SIGNIFICANCE OF UNCOMMON FRACTURES IN THE BATTERED CHILD SYNDROME

A. Marvin S. Egloff, M.D., Leonard E. Swischuk, M.D.,
and Charles J. Fagan, M.D.

SINCE its original description, the battered child syndrome has received considerable attention. Many forms of child abuse are recognized, but the roentgenologic detection of skeletal trauma still plays a prominent, if not the most prominent, role.

Because of this, it was decided to review the case histories and roentgenograms in 100 physically abused children, and to document the patterns of injury. This was done in order to determine how frequently various fractures occurred, including the assessed in terms of their potential specificity in diagnosing the battered child syndrome.

RESULTS

Detailed results are tabulated in Table 1.

The age of the patients ranged from 6 weeks to 8 years, with the majority being between 1 and 3 years of age. Forty-two patients were males and 58 were females. Of the 32 patients in Group 1, 21 (66 per cent) had positive roentgenographic findings, but only 11 (34 per cent) had evidence

Acromial normal

Variants
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![Image of radiographic findings](image1)

![Image of radiographic findings](image2)
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Occult vertebral body injuries
10/5/2012

Cervical Spine

3 MO.
Rocks et. al.
Pediatr. Rad. 1998

Twin Sib
Post reduction

Thoraco-lumbar Spinal Dislocation

1. Neurocentral synchondrosis injury with vertebral centrum displacement
2. Facet disruption and dislocation (with or without fracture)

Thoraco-lumbar Spinal Dislocation

1. Neurocentral synchondrosis injury with vertebral centrum displacement (not really a dislocation)
2. Facet disruption and dislocation (with or without fracture)
Circumferential Growth Plate Fracture of the Thoracolumbar Spine from Child Abuse

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Summary. We report a unique fracture dislocation of the thoracolumbar spine associated with child abuse and parastrauma. Because of severe growth trauma, this fracture may be initially difficult to identify without special imaging techniques. We suggest child abuse as a cause. Experience with these initial cases has suggested a treatment approach based on the mechanism of injury. There is no inherent means of obtaining the disk fracture and anterior vessel insertion.


Wandering “vagabond” vertebra

THORACO-LUMBAR SPINAL DISLOCATION

1. Neurocentral synchondrosis injury with vertebral centrum displacement
2. Facet disruption and dislocation (with or without fracture)

Sacral Fractures

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Pelvic fractures
Ossification of the Pubic Bones
Caffey and Madell, 1956

1286 newborn infants

Five-month-old with right hip dysplasia in a harness. No history of trauma.
The Prevalence of Uncommon Fractures on Skeletal Surveys Performed to Evaluate for Suspected Abuse in 930 Children: Should Practice Guidelines Change?

OBJECTIVE: The objective of our study was to evaluate the prevalence and site of fractures detected on skeletal surveys performed for suspected child abuse in a tertiary children's hospital and to determine whether any survey images may be discarded without examination.

METHODS AND RESULTS: We identified all skeletal surveys performed for suspected child abuse from April 1988 to December 2001 in children younger than 2 years. Radiographs were excluded if there were no signs to evaluate for suspected abuse. The prevalence of all fractures, fractures detected on initial surveys, fractures detected on all positive surveys, and fractures detected on all surveys with >1 fracture were calculated. The percentage of fractures identified on initial surveys was 2.7% (10/365) for the spine, 1.4% (5/365) for the hands, and 1.6% (6/365) for the feet. The percentage of fractures identified on all positive surveys was 4.4% (10/225) for the spine, 2.2% (5/225) for the hands, and 2.7% (6/225) for the feet. The percentage of fractures identified on all surveys with >1 fracture was 10.2% (10/98) for the spine, 5.1% (5/98) for the hands, and 6.1% (6/98) for the feet.

Kleinman PK et al unpublished data

Percentage of 365 S/F skeletal surveys with fractures of the spine, hands, or feet. April, 1988 and December, 2001*

<table>
<thead>
<tr>
<th>Region</th>
<th>On Initial SS</th>
<th>Of all Positive SS</th>
<th>Of all SS with &gt; 1Fx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spine</td>
<td>2.7 (10/365)</td>
<td>4.4 (10/225)</td>
<td>10.2 (10/98)</td>
</tr>
<tr>
<td>Hands</td>
<td>1.4 (5/365)</td>
<td>2.2 (5/225)</td>
<td>5.1 (5/98)</td>
</tr>
<tr>
<td>Feet</td>
<td>1.6 (6/365)</td>
<td>2.7 (6/225)</td>
<td>6.1 (6/98)</td>
</tr>
</tbody>
</table>

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