

Children's fractures and epiphysiolysis

There are some types of fractures in children that we do not see in adults. In general, we divide children's fractures into:

- epiphyseal separation and epiphyseal fracture
- bending fractures - they are treacherous, the fracture line is not visible, the bones are only bent - so-called bowing fractures
- willow stick type fractures - bone fracture without breaking the periosteum - so-called greenstick fractures
- compression, "torus" fractures

Separation of the epiphyses

- the growth cartilages are the weakest part of the child's skeleton (the ligaments are several times stronger, therefore there will be no dislocation, but the epiphysis breaks)
- separation occurs mainly in the hypertrophic zone of growth cartilage, in the layer of degeneration and provisional calcification

Classification according to Salter and Harris

- **1st type - pure separation of the epiphysis in the growth joint**
 - there is no bony lesion, if it is not dislocated it can be overlooked
 - if the germinal layer is not affected, the prognosis is good
- **2nd type - separation of the physis, but in a certain place there is a fracture towards the metaphysis**
 - on x-ray we see a triangular fragment (Thurston-Holland sign)
 - there is also no growth disorder
 - type 1 and 2 are epiphysiolysis
- **3rd type - right epiphyseal fractures**
 - the fracture line starts at the joint, runs through the core of the epiphysis to the periphery
 - the likelihood of a bone growth disorder is significant
- **4th type - transepimetaphyseal fractures**
 - the epiphyseal vascular system is also often broken - growth disorders
- **5th type - growth joint injuries caused by axial compression**
 - with a fresh injury, the diagnosis is quite problematic

Therapy

- children often tolerate limb injuries surprisingly well and a negative x-ray often means nothing!
- sometimes it is good to add an x-ray of a healthy limb (special - carpal bones, patella, etc.)
- conservative treatment dominates
- in general - we conservatively solve types 1, 2 and 5 (types 3 and 4, if there is no dislocation)

Children's fractures in special circumstances

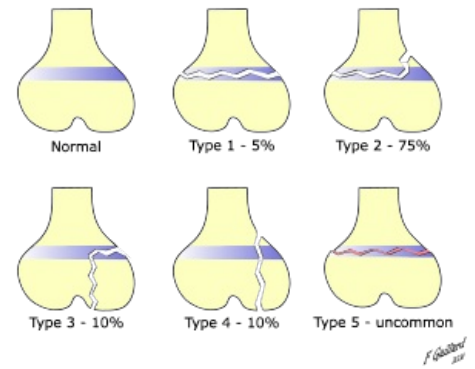
- birth fractures - most often the clavicle, then diaphyseal fractures of the humerus and femur
- fractures in the abused child syndrome - the child is screaming, scared, hematomas on the skin, suffusion, multiple epiphyseal separations
- pathological fractures - in benign bone affections - mainly juvenile bone cysts, non-ossifying fibroma, chondroma, etc.



Willow twig type fracture - X-ray

Consequences of childhood fractures

- most heal without sequelae
- growth plate disorders may occur
- the most common cause of bone growth arrest – the formation of so-called **bone bridges**
 - **healing bridge** – formed in the gap of an imperfectly repaired physis during distraction
 - **osteonecrotic bridge** – by breaking the cells of the reserve and proliferative zone as a result of a disorder of the epiphyseal arteries
 - according to the location in the bone, bridges are:
 1. *peripheral* – axial deviation of the limb
 2. *central* – shortening of the limb, with further growth the growth joint is deformed into a conical shape ("tenting")
 3. *combined* – the most severe – both shortening and angulation



Classification according to Salter-Harris

Links

Related Articles

- Coxa vara adolescentium

Source

- BENEŠ, Jiří. *Study materials* [online]. [feeling. 2009]. < <http://jirben.wz.cz> >.

References

- Dungl, P, et al. *Orthopedics*. 1st edition. Prague: Grada Publishing, 2005. 1273 pp. ISBN 80-247-0550-8 .

Category:Surgery Category:Pediatrics Category:Traumatology