

Distribution of occult fractures in children with (suspected) non-accidental trauma.

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Introduction Skeletal surveys are indicated for young children (< 5 years) when non-accidental trauma is suspected. According to a set protocol, radiographs of the entire skeleton are taken to detect occult fractures. Knowledge of the distribution of occult fractures is relevant for clinicians in order to improve detection of these fractures and awareness of symptoms.

Methods Between 2008 – 2018 all skeletal surveys of all children (< 5 years) were retrospectively analyzed. Both radiographs of admitted children and reassessment images from all over the country were included and reviewed by a forensic paediatric radiologist. Deceased children were excluded. Variables as gender, age (weeks), initial indication and occult fractures were collected. If there was a second skeletal survey (as follow-up), these occult fractures were collected.

Results In total 370 skeletal surveys of 296 children were included. Median age was 22 weeks (IQR 11 – 48), there were 172 (58%) boys. On the skeletal survey of 95 children (32%) occult fractures were detected. Occult fractures were detected in 33/126 (26%) children with a fracture as presenting symptom, 28/90 (31%) children with head trauma and 21/50 (42%) children with hematoma. Rib (n=56, 50%) and lower leg (n=40, 36%) fractures were most detected.

Conclusion Occult fractures on skeletal surveys were detected in 32% of the children. Occult fractures were most prevalent if the initial indication for skeletal survey was a (suspected) hematoma, fracture or head trauma. Clinicians should be aware of occult fractures in young children with suspected non-accidental injury.

