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### **E63 Comparing the Degree of Force in Infants With Suspected Abusive Head Trauma to Traffic Accidents or High-Altitude Falls Is Not Viable**

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After attending this presentation, attendees will have learned to be cautious when comparing injury mechanisms in suspected abusive head trauma with little external damage to traffic accidents or high-altitude falls when testifying in court.

This presentation will impact the forensic science community by informing attendees of the few similarities between infants with suspected abusive head trauma with little external injuries and infants involved in traffic accidents or high-altitude falls. This presentation will demonstrate that when rib fractures occur, they have extensive concomitant injuries to the organs of the trunk.

In the Swedish national guidelines on infant abuse and in prolific international infant abuse literature, there are statements that have influenced professionals testifying in suspected abusive head trauma cases that the forces applied during shaking are equivalent to an unrestrained traffic accident or a high-altitude fall. In certain studies, rib fractures have been considered to be specific for abusive head trauma due to compression of the rib cage; however, the occurrence of concomitant injuries to internal organs are rare.

Infants deceased from traffic accidents or high-altitude falls have few injury characteristics in common with children with suspected abusive head trauma. When rib fractures occur in traffic accidents or high-altitude falls, there are always concomitant injuries of the internal organs of the trunk.

Infants deceased after traffic accident or high-altitude falls (3 m) between 1994 and 2016 were identified in the computer registry of the Swedish National Board of Forensic Medicine. Cases identified were scrutinized regarding mechanism of injury, external signs of injury, and internal injuries.

Twelve cases were identified in which access to autopsy protocols were possible in ten. Eight cases were involved in traffic accidents, of which three were hit by cars while in strollers, and two were involved in high-altitude falls. All ten cases had extensive skull and/or skull base fractures, sometimes with open wounds and fractures of the orbita or spine. All six infants suffering thorax/abdominal trauma had injuries of the organs of the trunk. Only two infants had rib fractures and both had extensive injuries to the organs of the trunk. One case lacked a proper description of external signs of injuries. All nine cases with information had external injuries to the head and five cases had bruising or injuries to the trunk or extremities.

Professionals should avoid comparing abusive head trauma without massive external and internal injuries to traffic accidents or high-altitude falls when testifying in court. Rib fractures are rare in infants deceased after traffic accidents and when they occur, there is damage to the internal organs of the trunk. Infants with trauma to the trunk can suffer extensive internal injuries to the organs of the trunk without contracting concomitant rib fractures.

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**Abusive Head Trauma, Traffic Accident, Infant**