H27 Accidental Injuries in Children: A Clinical Study for Improving the Forensic Interpetation of Child Physical Abuse

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After attending this presentation, attendees will better understand how important it is to provide "control" data in order to differentiate between accidental and non-accidental injuries in the forensic evaluation of child abuse.

This presentation will impact the forensic science community by demonstrating which localizations are most commonly involved in all types of accidental trauma and their mode of production in children 3 years to 18 years of age, randomly selected from schools, with no history of abuse.

A recent study on this issue considered admissions to a medical center for both abuse cases and non-abuse "controls" according to similar standards; however, the existing literature has only briefly examined the pattern of injury distribution in accidental and non-accidental trauma in children generally under six years of age.[1-4] Moreover, the literature has especially focused only on bruising and its timing: this project seeks to extend the research to all types of skin injuries (recent, non-recent, and scars) and identify the most common manner of production and its frequency.[5,6] This could assist in the differential diagnosis between accidental and non-accidental trauma. Thus, the goal of this pilot control study was to highlight the anatomical location and the causes of accidental injuries based on medical history and the history of how specific trauma occurred in children less than 18 years of age.

Children were randomly recruited from three different comprehensive schools and nurseries, consisting of 205 individuals (103 males and 102 females). A physical examination, which took place after a consent form was signed by the parents, was performed on the entire body of the child, and all lesions and scars were photographed after the child/adolescent or parent had described how the lesion had occurred. The location of the injuries was recorded, according to nine anatomical areas (head/neck, anterior trunk, posterior trunk, upper limbs, lower limbs, hands, feet, pubis, and buttocks) and to 46 different sub-areas; the classification, dynamics (as told by the child or parent), frequency, and manner of production (sharp force injuries, blunt force wounds, and thermal injuries) were taken into consideration.

The study yielded a total of 1,381 lesions, with a mean of 6.3 injuries per person; however, 85% of the cases had a total number of less than 10 injuries. For 39% of the lesions, no information was given on the way in which the lesion had occurred, either because the child or parent did not remember or was not aware of the presence of the lesion or scar. Regarding the location of lesions, the results indicate that most of the lesions concern limbs (25% and 32%, respectively, for the upper and lower limbs), while the remaining injuries are divided as follow: 17% on the head/neck, 7% both on the anterior and posterior trunk, 10% on the hands, 2% on the feet, and 0.1% on the pubis and buttocks. If anterior/posterior location is considered, this study found only 36.3% of injuries in the posterior areas and 63.6% in the anterior areas of the body. This preponderance was true for all regions except for the upper limbs/hands, where 72% of wounds were on the posterior side of the body. The type of injury was divided as follows: 90% were blunt injuries (62.3% non-sport-related accidental injuries, 37.7% due to sports activities). Among the non-sport-related accidental injuries, 45% were excoriations, 36% lacerations, 15% bruises, 3% burns, and 1% fractures.

The results of this study show there is a peculiar anatomical distribution in accidental injuries, characterized by lesions to the upper posterior limbs and lower anterior limbs, as stated in literature but primarily only for blunt injuries. There was a high percentage of lesions for which there was no recollection: nearly 40% were of unknown origin. Blunt force trauma was the most representative (90%), while sharp and thermal injuries were significantly less represented. Moreover, among blunt force trauma, non-sport-related lesions were almost twice as high as the sport-related lesions.

The novelty of these data consists in the fact that all types of injury were considered (recent and old), along with their different modes of production (versus previous literature which considers only blunt force) and that a detailed account on how the trauma occurred was requested.

Finally, in child abuse cases, the history of how a lesion was produced is of great importance and the fact that for 39% of skin lesions there is no recollection by the child could be useful for interpreting abuse, since saying "I don't remember" does not necessarily mean "I don't want to tell."

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