

A CASE OF ABUSIVE HEAD TRAUMA IN A 1-MONTH-OLD MALE INFANT

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Objective - We present the case of one-month-old male infant with symptoms of abuse. **Case report** - The mother gave an accurate history of domestic violence, where the alcoholic father was the perpetrator who hit and shook the infant violently and strongly back and forth. He shaved and squeezed the infant's head against his body and hit the infant with his hand. The infant suffered from multiple fractures of the skull, excoriations and bruises, without loss of consciousness or vomiting. During hospitalization he did not have any further complications and was discharged after hospitalization in good condition. **Conclusion** - To best of our knowledge, we did not find any described or documented case of shaken-baby syndrome in professional literature in Croatia, so further studies are recommended. The typical patterns of clinical and radiographic findings allow a definitive diagnosis and it is important that health professionals are familiar with them.

Key words: Shaken baby syndrome ▪ Abused infant ▪ Child abuse ▪ Neurosurgery

Introduction

The incidence of child abuse reported to official agencies varies according to the reporting procedures and the definition used. The figures represent only those cases that are known to the authorities, so the true prevalence of child abuse is much higher. Infants are more at risk of fatal injury, physical abuse and neglect than older children (1). A review of medical records and computed tomography (CT) scans of all children less than 1 year of age admitted to the hospital with head injuries over

a 2-year period showed that sixty-four percent of all head injuries, excluding uncomplicated skull fracture, and 95% of serious intracranial injuries were the result of child abuse (2). The head injury inflicted is the most common cause of traumatic death in infancy (3). The most frequently encountered form of infantile inflicted head injury is the so-called shaken-baby syndrome (SBS). Shaken baby syndrome and non-accidental head injury apply to the syndromes of inflicted head injury in infancy, which reflect the complicated and sometimes controversial understanding of the actions necessary to cause those types of injuries, such as shaking an infant held by the arms or trunk or forcefully striking an infant's head against a surface. Some authors suggest that the term "shaking-impact syndrome" may reflect more accurately than "shaken-baby syndrome" the usual mechanism responsible for these injuries (4). SBS is an extremely serious form of abusive head injury (5) the incidence of which is unknown in Croatia.

Here, we report the case of one-month-old infant admitted to Zagreb Children's Hospital with symptoms of possible abuse.

Case report

A one-month-old male infant presented to the emergency room (ER) of Zagreb Children's Hospital with symptoms of craniocerebral injury. According to the mother, the injuries were caused by the father two days before when he acted out of anger after the infant had been constantly crying. At first he held the infant around the chest with his hands and shook him back and forth violently and strongly, and then he pushed the infant's head against his body and squeezed it very tightly between his right arm and his own body. Afterwards he hit the infant with

his hand and shaved his head. The infant did not lose consciousness and did not vomit; the mother noticed only that he was crying louder. ER physicians noticed the shaved head with many excoriations, incrustations and with a linear cut on the right occipital region. The anterior fontanel, measuring 2x1 cm, was below the level of the surrounding bone and tension was present. The face was puffy and swollen with excoriations around the nose and mouth and a bruise below his left eye. In the area of the right wrist a contusion was noticed (a bruise overlying the wrist joint). The extremities were symmetrical, appropriate in morphological and functional terms. No X-ray examination of the extremities was performed because the clinicians - pediatric surgeons concluded that it was not necessary since their clinical examination and procedures had ruled out the presence of a fracture. Ophthalmological investigation showed normal fundus without signs of increased intracranial pressure. Chest radiography was done routinely and was normal.

A craniogram of the skull showed a fracture of the nasal bones and two fractures of the right parietal bone, one below the other, 6-7 cm in length. CT scan of the brain showed the existence of multiple fractures of the skull and intracranially the existence of two cavities within the brain tissue on the frontal-parietal brain regions, which were placed symmetrically on both sides. The cavities were filled with liquid content, with signs of old blood deposited on the bottom of the cavity, which correspond to ischemic changes with respect to the terms of organized hematoma.

Cranial ultrasound scans showed malacic anechoic cysts bilaterally, a few millimeters in diameter (Fig. 1).

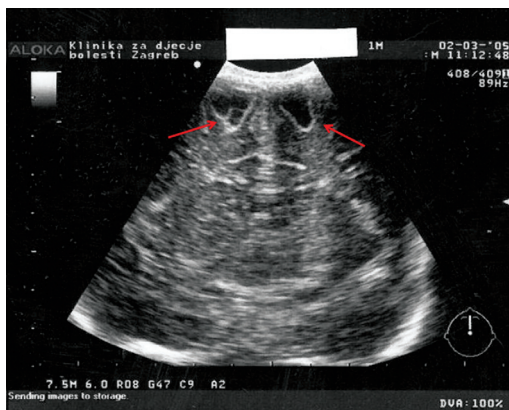


Figure 1 Cranial ultrasound scans. Cranial ultrasound scans were performed by Aloka, SSD-4000, micro convex probe 5-10 MHz and showed convexity in the area of the brain (parasagittal, frontal, parietal) malacic anechoic cysts bilaterally, a few millimeters in diameter, with no signs of intraventricular hemorrhage or within the brain parenchyma.

During his stay in the Children’s Hospital the infant took food by mouth spontaneously, maintained stable vital functions and did not develop further complications. He was discharged after 20 days of hospitalization in good condition.

The mother states that “father takes anxiolytics, is drinking a lot and tends to abuse his family”. After his arrest, he was transferred to the prison hospital. When asked about the alleged incident, he claimed that he did not recall anything, because he had drunk six bottles of beer and a bottle of wine that day. Reportedly he drinks alcohol only occasionally, but when he does, he does so to excess and does not know what he is doing. The expression on his face did not show any empathy towards these events or people from the immediate family. During treatment, when he was told that his child would be alright – he cried. He declined to notify his parents because he had been abused as a child by his father. On the basis of psychiatric evaluation the court sentenced him to six months’ psychiatric treatment be-

cause his actions were deemed to have been committed in a state of insanity. The discharging diagnoses were alcoholism and personality disorder.

The Centre for Social Welfare entrusted the child to the mother, and the father was denied visitation. Psychological evaluation of the mother showed no pathological features, despite the undoubted presence of fear indicators as a consequence of the fact that she had failed to defend herself in certain conflict situations.

Discussion

The occurrence of intracranial injury in infants, in the absence of a history of significant accidental trauma, constitutes grounds for an official child abuse investigation. Researchers found that subdural hemorrhage(s), cerebral ischemia, retinal hemorrhage(s), skull fracture(s) plus intracranial injury, metaphyseal fracture(s), long bone fracture(s), rib fracture(s), seizure(s), apnea, and no adequate history given are significantly associated with child abuse (6). Even though many studies strongly associate retinal hemorrhages with SBS and non-accidental head injury (5, 7), some other studies have shown that retinal hemorrhages are not specific for the diagnosis of SBS (8). Often medical histories are inefficient and unreliable, and a history of shaking is obtained in a minority of cases (9). SBS typically do not leave external evidence of abuse, but it is very important that subdural or subarchnoidal hemorrhage, and multiple skull fractures, particularly hemorrhage in the interhemispheric fissure can almost always be detected on CT scan (10). Many autopsy findings have been described in infants who have been abused, such as evidence of external injuries mostly located in the head and neck region, and fractures mostly common seen in the posterior pari-

etal bone, occipital bone or both (11). We also diagnosed fractures in those locations using the CT scan, which is similar to the findings of other studies. Some authors consider that the fractures occurring in children under 1 year of age, especially in cases with no history of trauma, are more likely to be caused by abuse (12). Children with abusive head injury are more likely to have seizures and an abnormal mental status on initial presentation (7). They often present with vague and non-specific symptoms (vomiting and irritability) and are more likely to be misdiagnosed (13). Many surviving abused infants may have intellectual and neurologic deficits, especially in those infants who have well-demarcated cavities mostly situated in the frontal lobes. These cavities represent the residua of gliding contusions (8). In the infant described in our case report, the CT scan and cranial ultrasound scans showed cavities in the brain lobes.

Several factors are typically associated with child abuse: e.g. young parents, unstable family situations, parental mental ill health and substance abuse, parents who were abused during their own childhood, low socioeconomic status, cultural background permissive to violence, social isolation, child morbidity, disability or prematurity (14). Starling et al. found that the perpetrators were, in descending order of frequency: fathers, boyfriends, female babysitters, and mothers (15). There is speculation that males, due to their greater physical power, are more likely to cause SBS when they 'shake' children (16). There is also evidence to suggest that individuals who are prone to anger and marked by explosive personality disorder, are likely to commit such acts (17). From the above mentioned, the male perpetrator from our case report demonstrates almost all the risk factors for child abuse with alcoholism, personality disorder

and the fact that he was abused by his father being the most important. Intergenerational transmission of abuse is described in many studies, between a parent's history of abuse and the parent's own abusive behavior (18).

According to the legal regulations in Croatia, every case of child abuse, as well as any abuse in the family, should be reported to the police. Unfortunately, there is no official register of abused children in Croatia. To the best of our knowledge, we did not find any described or documented case of SBS in Croatia in professional literature, so further studies are recommended. The typical patterns of clinical and radiographic findings allow a definitive diagnosis, and it is important that health professionals are familiar with them.

Conclusion

The SBS is a common, serious head injury. If the history and the physical and radiologic findings are suggestive of this syndrome, the patient should be admitted to the hospital for treatment. If child abuse is suspected, the appropriate child-welfare and law-enforcement agencies must be notified. Caretakers should be informed about the suspected diagnosis and procedure. The medical documentation has great legal importance. The future safety of a child with SBS depends on the physician's ability to recognize its characteristic features. Effective prevention strategies must be guided by an improved understanding of the pathophysiology and causes of this common disorder. The involvement of health professionals in child protection includes broader multi-sectoral networking and referral. Consideration should be dedicated to the capacity of the parents to meet the needs of their children and to the impact of wider family and environmental factors on the prevalence of child maltreatment. Positive parenting needs to be universally promoted (19).

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