

Shaken Baby Syndrome: the Local Perspective

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Summary

The medical profession in 1972 first described the shaken baby syndrome (SBS). Since then, SBS has been recognized as one of the most severe types of child maltreatment and is the most common cause of death in abused children. It refers to a form of severe head injury when a young child is shaken vigorously by a grown-up. The shaking produces a shearing force to the immature brain and tears the underlying nerve fibres and blood vessels. The more characteristic signs include bleeding in the subdural space (subdural haematoma) and the retina (retinal haemorrhage). Superficial bruises and fractures may provide important clues to the abusive nature, but these features are often absent. A confession by the abuser is almost never obtained. Hence, a heightened awareness is needed to identify the child with SBS. Although suspected cases of inflicted head injury in children have been mentioned, it was only first reported in the local medical literature in 1995. Because of the increased concern by the paediatric specialty, more cases were reported in the last four years. It is clear to the medical profession that the proper recognition and diagnosis of SBS require an expertise in the area of child abuse. A review in our hospital indicates that SBS occurs at an annual incidence of 1.4 per 100 000 children under the age of 15. It accounts for 5% of the abuse cases admitted into our hospital. 30% of the cases died and the others were left with significant neurologic handicaps. Many child protection workers in the social welfare, the law enforcement, and the health care disciplines are still unaware of or unfamiliar with the SBS. Misconceptions about childhood head injury and inexperience in handling the deceptive nature of most abusers are common among the caseworkers. The true incidence and the underlying factors predisposing to the occurrence of SBS are largely unknown. Because of the relatively uncommon occurrence of SBS in Hong Kong and the specific nature of this kind of maltreatment, individual expertise in the social welfare department, the law enforcement, and the medical discipline is required. Successful management of SBS calls for the effective collaboration among these disciplines. There is still much room for research concerning the prevention and follow-up of the SBS.

Introduction: What is Shaken Baby Syndrome (SBS)?

SBS refers to the constellation of symptoms and signs when a young child presents with clinical features of head injury (Table 1), together with specific features that suggests a shaking and deceleration mechanism (Table 2), with or without an obvious impact injury.¹ An account of an antecedent injury is often absent, or is grossly incompatible with the severity of head injury.

How Was SBS First Recognized as a Form of Child Abuse?

Like the majority of cases of child abuse, the perpetrator is unlikely to tell the true story about the abusive event.² Unlike the older child who is able to describe what has happened in him/her, the young infant or the severely injured child cannot tell the caseworker what actually happened. Not surprisingly, SBS is a relatively new clinical entity that first appeared in the medical literature 28 years ago. Guthkelch³ in the United Kingdom first noted that severe head injury in the young infant could be the result of vigorous shaking. He speculated that the abuser might find it more acceptable to boggle a child's brain than to bruise him on the face. In the next year, Caffey⁴ quoted twenty-seven cases and described that shaking seems to be instinctive, almost

Table 1 Clinical features of head injury in young children

Less specific features

Altered consciousness like drowsiness or coma
Vomiting
Convulsions or seizures

More characteristic features

Broken skull bone(s) or skull fracture(s)
Bleeding inside the cranium (intracranial bleeding)
Contusion of the brain

Table 2 Specific features that suggest the occurrence of shaking

The clinical feature	Documentation
Bleeding in the retina (retinal haemorrhage)	Ophthalmoscopy
Bleeding in the subdural space (subdural haematoma)	CT scan MRI Operation Autopsy
Broken nerve fibres (diffuse axonal injury)	Autopsy MRI

CT=computed tomography; MRI=magnetic resonance imaging

reflex, violent actions by angry adults in the commission of willful assault. After Caffey's classic description, the SBS became an established clinical condition and the medical profession started to learn about it. More cases were recognized and the basic biomechanical factors leading to SBS were studied.⁵ Thus, despite the relatively short history, SBS has become a well characterized clinical condition with lots of supporting evidence not just to the medical profession but also other disciplines in child protection.⁶

How Does SBS Occur? Why is it Harmful?

It is hard to know why the perpetrator has chosen shaking as a way of abusing young children. Our current understanding of the SBS, however, has indicated that shaking is a robust way of "calming" a crying and demanding infant. Vigorous shaking results in boggling of the infant's head around his neck. This produces strong shearing or tearing forces with different magnitudes upon the deeper and superficial parts of the brain.⁵ An impact to the head, with sudden decelerating forces, adds to the tissue damage. Impact is probably present in the majority of cases as abusers seldom put down the shaken baby gently after the shaking. However, clinical signs indicative of impact is often hard to find in the living child.¹

In terms of clinical relevance, the shearing forces also tear the blood vessels that pass between the hard and soft coverings (dura) at the surface of the brain. This produces the characteristic subdural haematoma or bleeding (Figure 1). Sometimes the bleeding takes place under the soft covering and is called subarachnoid haemorrhage. Both bleeding signs can be picked up by CT scan of the brain. Magnetic resonance imaging (MRI) is a more sensitive way of detecting these haemorrhages and has the added advantage of determining the "age" of the haemorrhages.⁷ Although there are other medical causes of acute subdural haematoma, child abuse has been found to be the most common cause of subdural haematoma and the other causes are often obvious from the history or laboratory investigations.¹

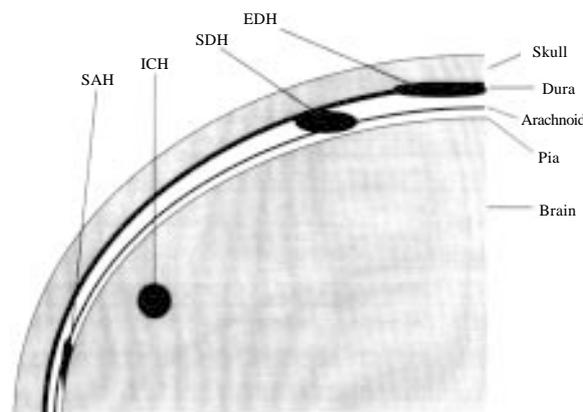
Shaking also tears the blood vessels on the retina, the innermost covering of the eyeball which is a light-sensitive area that conveys visual signals to the central nervous system.⁸ Retinal haemorrhages are best detected by ophthalmoscopy, a special magnifying glass for examination of the eye, by the bedside. Indirect ophthalmoscopy, a more sensitive and detailed examination, is best carried out by the eye specialist (ophthalmologist).

However, the most dreadful consequence of shaking occurs in the brain substance. Because the young infant's brain has not fully developed and the nerve fibres lack the protective sheath (myelin) that is present in the older

child and adults, these shearing forces can cause widespread damage to the nerves (diffuse axonal injury). Sometimes diffuse axonal injury may be detected on MRI, but it may only be documented at autopsy when the child dies. Because of the diffuse injury to the brain, the infant would lapse into unconsciousness very soon after the shaking. Swelling of the brain (cerebral oedema) often sets in and makes the situation worse. Death occurs in a significant proportion of cases and survivors are often handicapped from the brain injury.¹ For instance, out of the 10 cases of SBS reported from our hospital, there were three deaths and the other children were mentally handicapped.⁹

Other Associated Injuries

Early descriptions of SBS in the medical literature often depicted it as part of the battered child syndrome.^{3,4} Therefore, subdural haematoma was found among other injuries such as multiple bruises and fractures. However, with improved understanding of the SBS and more cases were recognized, the clinical scenario changed. Because of the way shaking takes place, external signs of injury need not appear. For instance, firm gripping produces local and temporary redness but not necessarily bruises. Depending on the way the chest wall is gripped, the typical posterior rib fracture is seldom seen. The appearance of other signs of bruises or fracture would depend on whether the child has been abused in other ways. As a whole, associated superficial or internal injuries are not found in over two-third of the cases reported in our hospital.⁹ Therefore, although these injuries are useful clues to the malicious nature of the injury, their absence is by no means exclusive of maltreatment.¹



EDH=epidural haemorrhage
SDH=subdural haemorrhage
ICH=intracerebral haemorrhage
SAH=subarachnoid haemorrhage

Figure 1 The various forms of intracranial bleeding

Problems in Handling SBS by Child Protection Workers

In our encounter with most child protection workers, including the health care professionals, SBS is still a poorly understood entity. There may be a number of reasons for this. Firstly, most child protection workers do not receive formal training in the subject. As SBS has not been mentioned in the local medical literature until 1996,¹⁰ it is perhaps not surprising that even the average medical practitioner does not understand the tactics in the diagnosis of SBS.

Secondly, both the perpetrator and the victim are extremely unlikely to tell what has happened. As mentioned in the previous section, in the majority of shaken babies, not even a trace of suspicion can be found on superficial examination. Thus, the diagnosis relies heavily on the medical specialist which, in most cases in Hong Kong, belongs to the paediatric discipline. On the other hand, the abuser often makes up stories to confuse the caseworkers. Observational studies in medicine, however, have shown that most, if not all, of these stories are false.^{11,12}

Will Falls from Short Distance Cause Severe Head Injury

One of the most common excuses given by caretakers concerning the occurrence of head injury is fall. However, free falls from heights of three to five feet in children rarely cause severe head injury. If severe head injury does occur after short distance falls, they will almost always involve a skull fracture or an epidural haematoma.¹³ This conclusion is drawn from carefully designed observational studies looking at large number of children presenting with corroborated histories of fall,¹⁴ and children who are subjects of unintentional falls from hospital cribs.¹⁵ On the other hand, acute subdural haematoma seen in SBS is a rare form of head injury in children.¹⁶ Clinical studies on children admitted into intensive care units¹⁷ or died of injuries¹⁸ indicate that subdural haemorrhage usually, but not necessarily, occur in children falling from excessive heights or victims of high speed traffic accidents. Indeed, child abuse is the most frequently identified cause of acute subdural haematoma in young children.^{19,20} For the various forms of bleeding inside the cranium, please refer to Figure 1.

Future Direction

Since SBS occurs uncommonly, it is unlikely that any significant improvement in handling will be made with a

haphazard approach of management. The complex and unique nature of the offence can only be tackled effectively and efficiently by a team of experienced child protection workers. Thus, experience should be built up in each of the medical, social welfare and law enforcement disciplines. In public hospitals, the Medical Coordinators on Child Abuse, most of which are senior staff, have already taken their responsibility. We strongly recommend that the senior members of the Child Protection Services Unit and the Child Abuse Investigative Unit to take up, or continue to assume, this responsibility. Only with the collaborative expertise from these departments will successful handling of SBS be expected.

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Psychological Intervention for Sex Offenders in the Correctional Services Department

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Introduction

While sex offenders represented about 1.5% of the penal population (as of 31.8.1999, there are 156 sex offenders amongst 10,172 inmates in the department), they received continuous attention from the psychological services in view of the nature of their offending behaviours and the positive outcome of psychological interventions in reducing re-offending (Marshall, Jones, Ward, Johnson & Barbaree, 1991). In this paper, I shall describe the profile of incarcerated sex offenders in particularly those who offended against children and the psychological treatment provided for them in the Correctional Services Department.

Profile of Incarcerated Sex Offenders

Incarcerated sex offenders are normally in their twenties to thirties and were mostly convicted of rape and indecent assault. About 48% of them had history of prior offences and amongst them, 18% of them are involved in sexual offences. For their current offences, about 1/3 of them had offended against children under 14. Amongst those who offended against children, 15% are involved in intra-familial sexual offences, i.e. the victims are their daughters. Amongst all cases involving children as victims, 66% involving one victim whereas about 33% involving two or more victims. The majority of the victims are aged 10 to 14.

In working with sex offenders who have offended against children, we have come across two distinct groups which are worth noting. One group being those having the diagnosis of pedophilia and the other group having committed sexual violence within their own families. Pedophiles are individuals who have recurrent intense sexual urges and sexually arousing fantasies involving sexual activity with children. The profile of pedophiles under our custody are compatible to those described in other literature in that they are more psychosocially immature, socially alienated and had difficulties in maintaining satisfying intimate heterosexual relationship (Prendergast 1991). They are usually more comfortable in the company of younger age group peers and their offending behaviour is well planned to seduce the children and this may included involving themselves in occupations working with children. Similar to the pedophiles, offenders involved in intra-familial sexual