

## Shaken Baby Syndrome

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*A 5-month-old infant with Shaken Baby Syndrome is reported. This form of physical child abuse is often overlooked. It should be suspected in infant who present with drowsiness, coma, seizures or apnea.*

**Keywords:** *Child abuse, Infant.*

Shaken baby syndrome (SBS) is a serious form of child abuse which may be frequently under diagnosed because there may be no obvious external evidence of injury(1). A review of previously reported cases yielded only one isolated report from the Indian Sub-continent(2). We present a child admitted with serious unexplained neurological symptoms in whom the diagnosis was made after excluding systemic disorders.

### Case Report

This 5-month-old thriving infant was brought in a critically unstable condition to our hospital with a history of low grade fever for 2 days, drowsiness and recurrent seizures

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*Manuscript received: September 30, 2002;*

*Initial review completed: October 28, 2002;*

*Revision accepted: September 12, 2003.*

since the day of admission, On arrival the baby was minimally responsive to pain and had decerebrate posturing with bilateral sluggishly reacting pupils, a bulging anterior fontanelle and apneic episodes. There was no history of bleeding diathesis, evidence of overt bleeds or external evidence of injury, The child was intubated and ventilated, anti edema measures initiated and a head CT performed, The CT revealed a thin left subdural hematoma with cerebral edema (*Fig. 1*). His full blood count including platelet count was normal. His coagulation profile, renal and liver function tests were within normal limits. A lumbar puncture was withheld in view of features of elevated intracranial pressure. Other investigations were non contributory. A neurosurgical consult was obtained and a conservative approach planned as there was no mass effect on CT scan.

The initial provisional diagnosis was intracranial infection and antibiotics were initiated in addition to anticonvulsants. A fundal examination, however, gave an entirely new dimension to the diagnosis. Both fundi revealed extensive retinal bleeds.

Armed with this knowledge, the parents were directly and tactfully questioned regarding the possibility of the child having been vigorously shaken, They admitted that an elder sibling aged 5 years used to play frequently with his infant brother and at times had been observed to have shaken him violently and vigorously. The history of shaking, presence of intracranial and retinal bleed and no coagulopathy allowed a firm diagnosis of shaken baby syndrome to be made. A CSF examination after 48 hours was completely normal and antibiotics were discontinued.

With supportive management, seizures were controlled, mental status improved and

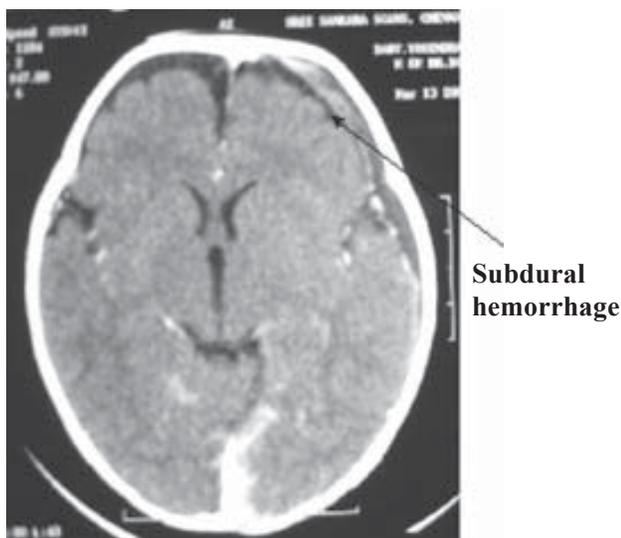


Fig. 1. CT brain revealing subdural hematoma.

episodes of posturing subsided. The tense anterior fontanelle become flat and the child was extubated on day 7. Apart from ophthalmological abnormalities, the neurological examination was normal. Vision was severely impaired with absent menace reflex and bilaterally dilated sluggishly reacting pupils.

A detailed fundus examination including slit lamp examination and fluorescein angiography was performed by an ophthalmologist which showed bilateral extensive preretinal, intraretinal and subhyaloid hemorrhages.

The baby was discharged on day 11 and the parents were advised to strictly supervise with his elder brother. During a follow up visit 6 weeks later his vision on the right eye had improved and he was amblyopic on the left.

**Discussion**

Shaken baby syndrome should be suspected in all children younger than one year of age who present with drowsiness, coma, seizures or apnea. A combination of

subdural hematomas, retinal hemorrhages with minimal or no trauma and no coagulopathy is almost pathognomonic of this syndrome. The findings are caused by shaking with or without impact. Physical signs of violence are often absent and the syndrome may easily be mistaken for a serious infection or seizure disorder(1). The infant is held by the thorax and shaken. This causes a repetitive acceleration deceleration trauma which leads to the typical intracranial bleeding, eye injuries and paravertebral rib fractures. Many cases are fatal or lead to seizures and neurological disability including blindness. Cerebral palsy, mental retardation or epilepsy may occur in about 60% of the children(1).

This syndrome was first described in 1974 by pediatric radiologist John Caffey, who coined the term 'infantile whiplash shaking syndrome' to describe the constellation of clinical findings in infants with intracranial and intraocular hemorrhage in the absence of external trauma to the head or fracture of the clavaria(3). These shaking injuries were

thought to be caused by the easily torn bridging veins of infants head. The infants head and blood vessels are particularly vulnerable to shaking and whiplash because of the relatively large head and weak neck muscles of the child, the abundance of unmyelinated brain tissue which permits excessive stretching of the brain and vessels, and the increased pliability of the skull as compared to the rigidly fixed internal soft tissue structures such as falx cerebri(4).

In contrast to the “Battered Baby Syndrome” all the findings in whiplash shaken baby syndrome of infants are subtle and demand awareness, an index of suspicion and a fundus.

Intraocular haemorrhages can range from minimal to severe. Therefore in a child under 3 years of age, the presence of extensive bilateral retinal hemorrhages raises a very strong possibility of SBS, which must be investigated(5).

Ophthalmic examination of children with suspected SBS is important for prognostic as well as diagnostic purposes. Diffuse fundic bleeds, vitreous hemorrhage or large subhyaloid haemorrhages are usually associated with worse visual outcome(6). Non reactive pupils and midline shifts of the brain structure correlates highly with mortality and more severe neurologic injury. Many are fatal. Of the survivors, upto 60% may have neurological sequelae which include seiures, cerebral palsy and blindness.

There is a spectrum of the consequences of SBS and less severe cases may not be brought to the attention of medical professionals. A victim of sublethal shaking may have a history of poor feeding, vomiting, lethargy and or irritability occurring for days or week. Signs

of SBS may vary from mild and non specific to severe and immediately identifiable clinically as head trauma. In the most severe cases which usually result in death or severe neurologic consequences the child usually becomes immediately unconscious and suffers rapidly escalating life threatening CNS dysfunction(1).

### Acknowledgement

We acknowledge the contribution of Dr. Janakiraman Senior Consultant, Ophthalmology for ophthalmic examination and slit lamp eye pictures.

*Contributors:* IJ and DG were responsible for collecting the clinical data and literature search. All authors drafted the manuscript. SR critically reviewed the manuscript. SR will act as the guarantor of the paper.

*Funding:* None.

*Competing interest:* None stated.

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