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SHAKEN BABY SYNDROME

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ABSTRACT

Shaken baby syndrome is a serious and clearly definable form of child abuse. It results fromextreme rotational cranial acceleration induced by violent shaking or shaking/impact, which would be easily recognizable by others as dangerous.Shaken babies are usually less than one year old, and most are under six months of age. Head injury (notably subdural hemorrhage) and retinal hemorrhages are the hallmarks of the syndrome.

Keywords : Hypoxia, Perfusion, Ischemia, Hematoma, Paralysis, Retinoschisis.

INTRODUCTION

Shaken baby syndrome is a form of child abuse that causes severe brain damage. It can result from as little as five seconds of shaking.Babies have soft brains and weak neck muscles. They also have delicate blood vessels. Shaking a baby or young child can cause their brain to repeatedly hit the inside of the skull. This impact can trigger bruising in the brain, bleeding in the brain, and brain swelling. Other injuries may include broken bones as well as damage to the baby's eyes, spine, and neck.Shaken baby syndrome is more common in children under age 2, but it can affect children up to age 5. Most cases of shaken baby syndrome occur among infants that are 6 to 8 weeks old, which is when babies tend to cry the most.'Abusive headtrauma [AHT]' is now recommended term to be used, rather than shaken baby syndrome or accidental injury.

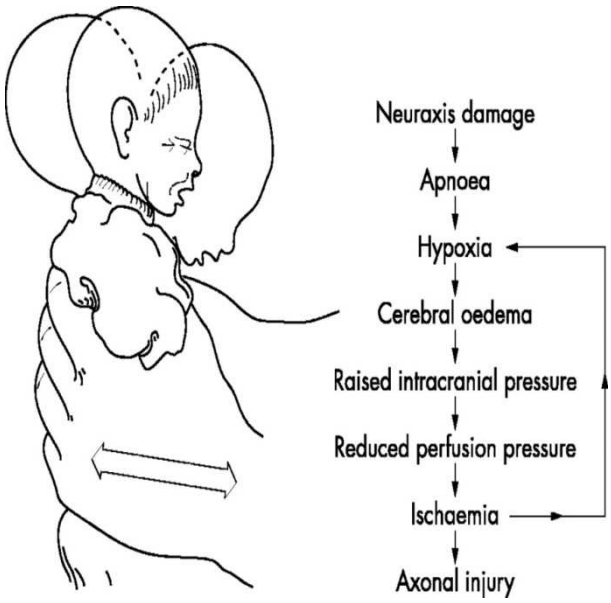
WHY BABIES ARE SHAKEN

- Unrealistic expectation of babies
- Young or single parenthood
- Stress and frustration
- Domestic violence
- Alcohol or substance abuse
- Unstable family Situations

- Depression

At least 1 in 4 shaken baby die. Those that survive may experience blindness, cerebral palsy,intellectual or developmental delays, seizure and other conditions.

PATHOPHYSIOLOGY;



Rotational forces, occur during shaking, causes the brain to turn on its central axis or at the attachment to the brain.Shaking, with or without the suddendeceleration of the head when it impacts a surface, can cause the following:

- **Subdural hematoma,** which is a collection of blood between the surface of the brain and the Dura. This occurs when the veins that bridge from the brain to the Dura are stretched beyond their elasticity, causing tears and bleeding.
- **Subarachnoid hemorrhage,** which is bleeding between the arachnoid (web-like membrane surrounding the brain filled with spinal fluid) and the brain.

Direct trauma to the brain substance itself, caused when the brain strikes the inner surfaces of the skull.

- Shearing off or breakage of nerve cell branches (axons) in the cortex and deeper structures of the brain caused by violent motion to the brain.
- Further irreversible damage to the brain substance from the lack of oxygen if the child stops breathing during shaking.
- Further damage to the brain cells when injured nerve cells release chemicals that add to oxygen deprivation to the brain.

SIGNS AND SYMPTOMS

Symptoms of shaken baby syndrome may include:

- Brain swelling, subdural hemorrhage [SDH] and retinal hemorrhage are three classic findings that indicate an infant has been abused.
- Subdural hemorrhage - Movement of the brain within the subdural space causes stretching and tearing of the bridging veins, which extend from the cortex to the Dural venous sinus.
- Retina hemorrhage – occur as a result of acceleration – deceleration forces and retinoschisis.
- Body tremors&Poor eating
- Vomiting
- Seizures, Paralysis&Coma

The national center for shaken baby syndrome calls it as PURPLECRYING.

- **P**eak pattern
- **U**npredictable (crying starts and stops without reason)
- **R**esistant to soothing
- **P**ain like look on face
- **L**ong bouts of crying
- **E**vening crying

TEST AND DIAGNOSIS To make a diagnosis, we will look for the three conditions that often indicate shaken baby syndrome. These are:

- Encephalopathy , or brain swelling
- Subdural hemorrhage, or bleeding in the brain
- Retinal hemorrhage, or bleeding in a part of the eye called the retina

There is variety of tests to check for signs of brain damage may include:

- MRI scan&CT Scanwhich uses powerful magnets and radio waves to produce detailed images of the brain
- Skeletal X-ray which reveals spine, rib, and skull fractures.
- **SPECT [SINGLE PROTON EMISSION COMPUTED TOMOGRAPHY]** –reveal cerebral blood flow and to assess delays in physical and mental health growth.
- Ophthalmic examination, which checks for eye injuries and bleeding in the eyes.
- Blood test, to identify mild to moderate anemia, leukocytosis -50% of cases.
- Coagulation studies – mild or sever abnormalities.
- CSF analysis – may be bloody indicating subarachnoid hemorrhage.

PREVENTION

The only way to prevent SBS is educating adults. A common reason given by adults for this type of

abuse is frustration with a crying baby. Parents and care giver can be taught how to deal with this frustration. One general rule is to leave a crying baby alone until the adult has calmed down. A warm bottle, dry diaper, soft music, a bath, or a ride in a swing may calm the child, which in turn may calm the adult.

TREATMENT OF SBS:

There's no medication to treat shaken baby syndrome. In severe cases, surgery may be required to treat bleeding in the brain. This may involve placement of a shunt, or thin tube, to relieve pressure or to drain excess blood and fluid. Eye surgery may also be needed to remove any blood before it permanently affects vision.

The American Red Cross recommends the following steps to perform CPR:

- **Carefully put the baby on their back.** If we suspect a spinal injury, it's best if two people gently move the baby so the head and neck don't twist.
- **Set up your position.** If the infant is under age 1, put two fingers on the middle of the breastbone. If the child is over age 1, place one hand on the middle of the breastbone. Put your other hand on the baby's forehead to keep the head tilted back. For a suspected spinal injury, pull the jaw forward instead of tilting the head, and don't let the mouth close.
- **Perform chest compressions.** Press down on the breastbone and push about halfway into the chest. Give 30 chest compressions without pausing while counting out loud. The compressions should be firm and fast.
- **Give rescue breaths.** Check for breathing after the compressions. If there's no sign of breathing, tightly cover the baby's mouth and nose with your mouth. Make sure the airway is open and give two breaths. Each breath should last about one second to make the chest rise.
- **Continue CPR.** Continue the cycle of 30 compressions and two rescue breaths until help arrives. Be sure to keep checking for breathing.

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