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Insights

A glimpse into timely topics affecting the investigation and prosecution of child abuse in South Carolina

'Courtroom Diagnoses' Attempt to Obscure the Reality of Shaken Baby Syndrome

Theories untested in the scientific arena often receive a more welcome reception in the media – and, on occasion, in the courtroom. The Boston prosecution of au pair Louise Woodward for the murder of eight-month-old Matthew Eappen provides an on-going example of this phenomenon. Prosecutors and law enforcement officers need to be aware of legitimate scientific knowledge on shaken baby syndrome and be alert to speculative theories such as those proposed in the Woodward case.

Overview of Shaken Baby Syndrome

Shaken baby syndrome describes injuries of infants and young children resulting from a violent shaking inflicted by an adult. As defined by one pathologist, shaken baby syndrome is “the result of a *violent shaking force* that causes a whiplash acceleration-deceleration motion of the relatively unstable infant’s head upon its neck.” (Robert Kirschner, *The Battered Child* at 271). Based on comparisons to accidental injuries and statements made by numerous abusers, medical literature describes the mechanism of shaken baby syndrome as an adult who holds a child by the rib cage or shoulders and severely shakes the child forward and back for a period ranging from five to 20 seconds and may involve as many as 40 to 50 violent shakes. Victims of violent shaking are usually under two years old, although they may be older depending on the relative sizes of the child and the adult.

During the shaking, the child’s head swings forward until the chin strikes the child’s chest and then swings back until the back of the head strikes the child’s back. Due to an infant’s relatively large head and weak neck muscles, the head moves in a violent “whiplash” fashion. The resulting trauma to the brain and accompanying lack of oxygen to brain cells causes the brain to swell and to increase the pressure within the skull. If not relieved, the swelling will kill the child. Victims who survive often lose their sight or suffer permanent brain damage.

The motion of the child’s brain rotating violently within the skull also causes tiny veins to tear and bleed in the compartments between the brain and its coverings, which results in subdural or subarachnoid bleeding (or both). (The dura mater and the arachnoid membrane are two membranes covering the brain.) The bleeding is a marker that severe force has been used, but is not itself the most serious injury; the life-threatening injury is the direct damage to the brain itself.

Rather than solely shaking an infant, abusers often throw or slam a child onto a floor, against a wall, or into another firm surface, resulting in skull fractures and additional damage to the brain. There may be no external signs of impact such as bruising if a child is thrown against a “yielding” surface. Medical literature demonstrates that, while shaking with impact is common, shaking alone is sufficient to cause severe injury or death.

Common findings of shaken baby syndrome include subdural hematoma, skull fractures (if impact is involved), extensive bleeding in the back of the inner surface of the eyes (retinal hemorrhages), and broken or bruised ribs or arms from where the child was held. The existence of any combination of these injuries provides strong evidence of abuse, although the absence of one or more such injury does not preclude a shaken baby syndrome diagnosis and other injuries that one might think would be common (such as severe neck injuries) are in fact rare. In addition, different injuries may be present depending on the precise mechanism of injury.

A child with a fatal head injury will lose consciousness, suffer convulsions, have difficulty breathing, or exhibit other clear symptoms soon after the incident. Thus, in the case of fatal head injury, the trauma most likely occurred after the last confirmed period of normal consciousness.

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Case Update: U.S. Supreme Court Expands *Daubert*

Kumho Tire Co. v. Carmichael, (March 23, 1999) [available at <http://supct.law.cornell.edu/supct/>]

In *Daubert v. Merrell Dow Pharm.*, 509 U.S. 579 (1993), the Supreme Court created a test for analyzing expert testimony under the Federal Rules of Evidence. Rule 702 allows admission of “scientific, technical, or other specialized knowledge” if it will “assist the trier of fact.”

The Court, looking only at the category of “scientific” expert testimony, identified a minimum of four factors courts should consider: (1) whether the expert’s theory has been tested; (2) whether the theory has been subject to peer review; (3) the rate of error for the theory and standards governing its operation; and (4) whether it is generally accepted in the scientific community.

In *Kumho Tire*, the Court expanded *Daubert*, holding the same factors applicable to expert testimony based on

“technical or other specialized knowledge.” While at first this may not appear striking, it has potentially important implications for child abuse prosecutors.

Much expert testimony introduced in child abuse prosecutions comes from the social sciences rather than the traditional “hard” sciences. Because expert opinions often are based on a combination of clinical experience and published literature, it may be difficult to identify the specific standards and rates required by *Daubert*. The most important implication may be simply that prosecutors must be well versed on scientific concepts such as the error rate and must ensure that experts are prepared to discuss the published literature.

Prosecutors should be aware of this opinion both to assist in formulating objections to untested testimony offered by the defense and to prepare for defending the testimony of your own experts.

... Shaken Baby Syndrome, continued

As stated by one of the foremost pediatric forensic pathologists in the United States: "Fatal shaking events are, with rare exception, characterized clinically by almost immediate loss of consciousness, often with associated seizures and apnea. Irritability, inability to feed, vomiting, and lethargy are common components of less severe shaking episodes." (Robert Kirschner, *The Battered Child* at 273).

Many medical experts equate the force necessary to kill a child with the force of an automobile accident or a fall from an upper story window. As stated by the American Academy of Pediatrics: "[T]he act of shaking/slamming is so violent that competent individuals observing the shaking would recognize it as dangerous." Short distance falls rarely cause skull fractures, but if they do, the fractures are small (less than one millimeter) and differ in type from fractures seen in shaken babies. These forces require the strength of an adult; it is not plausible to explain massive intracranial injury as inflicted by another young child or as the product of normal activity such as bouncing children playfully.

Novel Defense Theories

Two previously untested theories challenging the vast literature on shaken baby syndrome emerged from the prosecution of Louise Woodward. First, at trial, the defense hired experts who postulated that Matthew Eappen suffered a head injury approximately three weeks before his death, and that a minor injury on the day of his death renewed the bleeding and caused his death. The jury rejected the re-bleed theory and found Louise Woodward guilty of murder. After her conviction, a group of 72 prominent physicians who specialize in the diagnosis and treatment of child abuse victims responded to the defense experts' view with a strong rejoinder, stating in part:

The hypothesis put forward by the defense that minor trauma caused a "re-bleed" of an earlier head injury can best be characterized as inaccurate, contrary to vast clinical experience and unsupported by any published literature. The "re-bleed" theory in infants is a courtroom "diagnosis," not a medical diagnosis, and the jury properly rejected it.

The second novel theory emerged on March 7 of this year when the CBS news program "60 Minutes" broadcast the opinion of a physician in Los Angeles who theorized that Matthew Eappen was strangled anywhere from 24 to 48 hours prior to his death. The physician declared that the effects of the strangulation did not appear until many hours after the act, thus removing Louise Woodward as the only one who could have inflicted the injuries.

Like the re-bleed theory, the strangulation theory has been roundly rejected by many prominent experts in the country. More than 50 physicians who specialize in the diagnosis and treatment of child abuse called the theory "preposterous" and entirely unsupported in the scientific literature. Even if the medical theory itself were not preposterous, the evidence in this case is not explained by strangulation. Matthew Eappen had a two inch skull fracture on the back of his head, subarachnoid and subdural bleeding, and bilateral retinal hemorrhages (bleeding in the back of the inner surface of both eyes). The strangulation theory fails to explain any of the injuries. In contrast, all of these injuries are classic markers of shaken baby syndrome with an accompanying violent impact onto a hard surface.

The Woodward case illustrates that those involved with investigating and prosecuting fatal child abuse must be aware of shaken baby syndrome literature. When novel theories are advanced in a case, prosecutors and medical professionals should be prepared to rebut them.

Contact the Children's Law Office if you would like more literature on shaken baby syndrome or if you would like a referral to a physician to help review your medical evidence. We have many outstanding medical experts in South Carolina with extensive experience treating abused children.

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