POLICY STATEMENT

Abusive Head Trauma in Infants and Children

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ABSTRACT

Shaken baby syndrome is a term often used by physicians and the public to describe abusive head trauma inflicted on infants and young children. Although the term is well known and has been used for a number of decades, advances in the understanding of the mechanisms and clinical spectrum of injury associated with abusive head trauma compel us to modify our terminology to keep pace with our understanding of pathologic mechanisms. Although shaking an infant has the potential to cause neurologic injury, blunt impact or a combination of shaking and blunt impact cause injury as well. Spinal cord injury and secondary hypoxic ischemic injury can contribute to poor outcomes of victims. The use of broad medical terminology that is inclusive of all mechanisms of injury, including shaking, is required. The American Academy of Pediatrics recommends that pediatricians develop skills in the recognition of signs and symptoms of abusive head injury, including those caused by both shaking and blunt impact, consult with pediatric subspecialists when necessary, and embrace a less mechanistic term, abusive head trauma, when describing an inflicted injury to the head and its contents. Pediatrics 2009;123:1409–1411

HISTORY

The recognition of child abuse in modern medicine began in the 19th century, with the work of the French forensic physician Ambroise Tardieu,1,2 who described a wide array of physical and sexual injuries to children, including meningeal hemorrhage and brain injuries in fatally abused infants. More than 80 years later, American physicians began describing the clinical and radiologic manifestations of child abuse. Pediatrician and radiologist John Caffey3,4 first described the association of chronic subdural hemorrhages and long-bone fractures in 1946, but it was not until 1972 that he published a seminal paper describing the radiologic and clinical features attributed to shaking injuries. Ludwig and Warman5 first published the term “shaken baby syndrome” in their review of 20 infants and young toddlers injured by shaking, none of whom showed evidence of impact injury to the head. In 1987, Duhaime et al6 reported that victims of fatal shaken baby syndrome, and many of those who survived their trauma, showed evidence of blunt impact to the head at the time of diagnosis. The importance of impact in acceleration/deceleration injury was supported by their basic biomechanical models, and they concluded that most serious abusive head injuries required an impact to the head. The relative importance of impact as a contributor to the head injury sustained by abused children became a source of controversy. Biomechanical modeling has since been used to both support and refute the contributions of shaking or impact to abusive head trauma (AHT).7,8 In reality, all models and theories have known limitations, and many clinicians and researchers acknowledge that precise mechanisms for all abusive injuries remain incompletely understood.9 Efforts to better understand the mechanisms and causations of injury have improved the gathering of objective data in the clinical realm. Case investigations, including meticulous medical history taking, examinations, and medical workups, have expanded and improved. Medical diseases that can mimic the presentation of AHT are recognized, and screening is performed when indicated. Social welfare, law enforcement, and legal professionals have become better educated about AHT. Clinical research has expanded, and biomechanical modeling of injuries has improved.

Case histories clearly support the conclusion that shaking occurs in some injury scenarios. Shaking was the most commonly reported mechanism of injury described in a series of AHT cases in which perpetrators admitted abuse (68% of 81 cases).10 Shaking alone was described in 32 cases, and only 4 of the victims showed evidence of impact injury. Although this indicates incomplete admission to the injury mechanism in some cases, the commonality of a described shaking mechanism along with the infrequency of impact evidence supports shaking as an important mechanism of AHT. In addition, blunt impact trauma or impact combined with shaking can result in infant head injuries.11 In severe and fatal cases, concomitant cervical spine injury can sometimes be found.12 Secondary brain injury resulting from hypoxia, ischemia, and metabolic cascades contributes to poor outcomes.13,14 Shaken baby...
syndrome is a subset of AHT. Injuries induced by shaking and those caused by blunt trauma have the potential to
result in death or permanent neurologic disability, in-
cluding static encephalopathy, mental retardation, cere-
bral palsy, cortical blindness, seizure disorders, and
learning disabilities. Medical and biomechanical re-
search, clinical and pathologic experience, and radiologic
advances have improved our understanding of the range
of mechanisms that contribute to brain injury from AHT,
yet controversy remains.

DISCUSSION
Few pediatric diagnoses engender as much debate as
AHT, in part because of the social and legal conse-
quences of the diagnosis. The diagnosis can result in
children being removed from their homes, parents losing
their parental rights, and adults being imprisoned for
their actions. Controversy is fueled because the mecha-
nisms and resultant injuries of accidental and abusive
head injury overlap, the abuse is rarely witnessed, an
accurate history of trauma is rarely offered by the per-
petrator, there is no single or simple test to determine
the accuracy of the diagnosis, and the legal conse-
quences of the diagnosis can be so significant. Because
the civil and criminal justice systems are often involved
in cases of AHT, the scientific debates related to mecha-
nism and causation of injury often are argued during
courtroom proceedings. On occasion, the courtroom al-
lows for scientific theory to be confirmed or refuted,
but in reality, the American justice system is not de-
dsigned to determine scientific truth but, rather, to bal-
ance contested facts and bring closure to a dispute. Med-
ical terminology should accurately reflect the medical
diagnosis. The term “shaken baby syndrome” has be-
come synonymous in public discourse with AHT in all its
forms. The term is sometimes used inaccurately to
describe infants with impact injury alone or with multi-
ple mechanisms of head and brain injury and focuses on
a specific mechanism of injury rather than the abusive
event that was perpetrated against a helpless victim.
Legal challenges to the term “shaken baby syndrome”
can distract from the more important questions of ac-
countability of the perpetrator and/or the safety of the
victim. The goal of this policy statement is not to detract
from shaking as a mechanism of AHT but to broaden the
terminology to account for the multitude of primary and
secondary injuries that result from AHT, some of which
contribute to the often-permanent and significant brain
damage sustained by abused infants and children.

The term “shaken baby syndrome” has become rec-
ognized by the public; prevention strategies for curtailing
the incidence of AHT have been developed and re-
searched, and some states have mandated shaken baby
syndrome education for parents of all newborn infants. Because it may not be obvious to parents that shaking
can be harmful to infants, the newborn nursery is an
appropriate venue for this education. The American
Academy of Pediatrics supports prevention efforts that
reduce the frequency of AHT and recognizes the utility
of maintaining the use of the term “shaken baby syn-
drome” for prevention efforts. Just as the public com-
monly uses the term “heart attack” and not “myocardial
infarction,” the term “shaken baby syndrome” has its
place in the popular vernacular. However, for medical
purposes, the American Academy of Pediatrics recom-
mends adoption of the term “abusive head trauma” as the
diagnosis used in the medical chart to describe the constel-
lation of cerebral, spinal, and cranial injuries that result
from inflicted head injury to infants and young children.

THE ROLE OF THE PEDIATRICIAN
As mandated reporters of suspected child abuse and
neglect, pediatricians carry the burden of recognizing
and responding to medical manifestations of AHT. The
diagnosis is sometimes obvious, but injuries in many
symptomatic infants are unrecognized by unsuspecting
physicians. In addition, physicians do not always report
to child welfare agencies injuries that are highly suspi-
cious for abuse, which puts children at further risk for
injury. To protect abused infants and prevent future
severe neurologic injury, pediatricians must remain cog-
nizant of the possibility of AHT in infants who present
with both subtle and overt neurologic symptoms and
take seriously the ethical and legal mandates to report
suspected child abuse to governmental agencies for in-
vestigation. Pediatricians also have a responsibility to
consider alternative hypotheses when presented with a
patient with findings suggestive of AHT. A medical diag-
nosis of AHT is made only after consideration of all the
clinical data. On some occasions, the diagnosis is appar-
ent early in the course of the evaluation, because some
infants and children have injuries to multiple organ
systems that could only be the result of inflicted trauma.
On other occasions, the diagnosis is less certain, and
restraint is required until the medical evaluation has
been completed. However, as physicians, we have an
obligation to make a working diagnosis, as we do with
many other diagnoses, and take the legally mandated
steps for further investigation when indicated. Pediatri-
cians often find it helpful to consult a subspecialist in the
field of child abuse pediatrics to ensure that the medical
evaluation has been complete and the diagnosis is accu-
rate. Subspecialists in radiology, ophthalmology, neuro-
surgery, neurology, and other fields should also be con-
sulted when necessary to ensure a complete and
accurate evaluation. When child protective services or
law enforcement is involved in an investigation, the
pediatrician is required to interpret medical information
for nonmedical professionals in an understandable man-
ner that accurately reflects the medical data. Pediatrici-
cians also have a responsibility to the family of the
abused child. The diagnosis of child abuse has enormous
social, psychological, and legal implications for families.
The role of the pediatrician is not to apportion blame or
investigate potential criminal activity but to identify the
medical problem, treat the child’s injuries, and offer
honest medical information to parents and families. Fi-
ally, pediatricians can work to prevent AHT by support-
ing prevention efforts in the community and in practice.
Pediatricians may help prevent AHT by providing anticip-
atory guidance to new parents about the dangers of
shaking or impact and providing methods for dealing
RECOMMENDATIONS

1. Pediatricians should be alert to the signs, symptoms, and head injury patterns associated with AHT.

2. Pediatricians should know how to begin a thorough and objective medical evaluation of infants and children who present for medical care with signs and symptoms of potential AHT. Consultants in radiology, ophthalmology, neurosurgery, and other subspecialties are important partners in the medical evaluation and can assist in interpreting data and reaching a diagnosis.

3. Pediatricians should consider consulting a subspecialist in the field of child abuse pediatrics to ensure that the medical evaluation of the patient has been complete and that the diagnosis is accurate.

4. Pediatricians should use the term “abusive head trauma” rather than a term that implies a single injury mechanism, such as shaken baby syndrome, in their diagnosis and medical communications.

5. Pediatricians should continue to educate parents and caregivers about safe approaches to calming and coping with crying infants and the dangers of shaking, striking, or impacting an infant’s head.

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REFERENCES


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