PHYSICAL ABUSE

Robert A. Shapiro, Amy L. Baxter: Children's Hospital Medical Center of Cincinnati

Child abuse is a problem that virtually all primary care physicians will encounter in their practice. Physicians are required by state laws to report suspected physical abuse or neglect to the legally mandated agency in their community. Although the exact legal definition of child abuse varies from state to state, an accepted medical meaning of physical abuse includes any injury to or death of a child less than eighteen years of age resulting from the intentional commission of an act(s) by the child's caretaker. A commonly accepted medical meaning of neglect includes any injury to, suffering or death of a child under of the age of eighteen years resulting from the omission of an act(s) by the child's caretaker.

I. Statistics. In 1997, there were reports of alleged child maltreatment of almost three million children, 39 reports for each 1,000 children in the United States. Just under one million of those reports were verified as abuse by children's protective agencies. Twenty-four percent of the reports were for physical abuse and 54% were for neglect. 1196 deaths in the U.S. in 1997 were due to child abuse; 77% were children aged three or younger.

II. Risk Factors. Child abuse has been reported in households of all nationalities and ethnicities. The likelihood of abuse increases in families with incomes below $15,000 per year compared to families with an annual income above $30,000. Other factors that may increase a child's risk for abuse include prematurity, mental or physical disabilities, and temperamental or needy behavior. Over 85% of perpetrators of child abuse are parents or other relatives of the victim. Caretakers are more likely to abuse children if they were abused or neglected as children, are isolated, lack resources to handle stress, are young, are impulsive, lack knowledge of child development, are substance abusers, or suffer from mental illness. Abuse is often diagnosed, however, in families in whom specific risk factors are absent.

III. Prevention

Awareness of risk factors in families can enable the physician to maintain increased vigilance for abuse. At an early well baby visit, inquiring about spousal abuse, neighborhood violence, and childcare plans can help guide prevention discussions. Consider discussing parents' attitudes about disciplining infants, and emphasize the dangers of shaking a baby. Let parents know that it is common to get tired and frustrated with a new baby, and that it is acceptable to leave the child crying in a safe crib until the parent feels calmer. Many cities have help lines established for caretakers to call if they feel overwhelmed.

III. History. When evaluating a child for child abuse, the history should document the how, where, when and with whom for all suspicious injuries. Abuse should be suspected whenever the history is 1) inconsistent with the degree or mechanism of trauma; 2) incompatible with the child's developmental abilities; or 3) changed by the historian without an adequate explanation. Fictitious histories are likely to be incomplete and may contain conflicting details. Abuse should be seriously considered if there is an unreasonable delay in seeking medical care and when injuries are diagnosed in non-ambulating children.

IV. Specific Injuries

A. Bruises. Bruises are the most common type of injury from abuse. There are features that can help distinguish accidental from inflicted bruises. Accidental bruises most commonly occur over body areas that lack "padding", such as the forehead, elbows, knees and shins. Bruises over padded parts of the body, such as the cheeks, abdomen, flanks, buttocks and thighs are injured less often by accidental activities and need to be examined more thoroughly for possible abuse. The physician should suspect abuse if the child has a large number of bruises over different areas of the body and when the bruises look to be of different ages. Bruises on non-ambulatory children are unusual and are often signs of abuse. Pattern injuries, such as loop marks, handprints, fingerpad bruises, and trauma from other recognizable objects are all strongly suggestive of abuse. Parallel linear petechial injuries may signify a high velocity impact from a stick, fingers, cord, etc. Choking must be considered when petechiae around the eyes are present along with bruising around the neck .

Color photographs of all injuries should be obtained if abuse is suspected. In most states, parental consent is not required. A measuring tape should be placed next to the injury before taking the picture so that size is recorded. Sketches should be made in the medical record documenting the location, size, shape and color of the bruises. The age of the bruise cannot be determined by its color alone. Recent bruises may be tender, swollen and the overlying skin may be abraided. Resolution of the bruise may occur within a few days or many weeks.

B. Fractures. In the non-ambulatory infant, a fracture should alert the physician to the possibility of abuse. Rib, metaphyseal, and scapular fractures are very suspicious of child abuse. Fractures resulting from allegedly minor trauma and children with multiple fractures of various ages are typical findings in the abused child. The presence and degree of callous about the fracture site will roughly date a fracture. Typically, callous will appear about the fracture within 10-14 days.

C. Burns. The appearance of the burn usually provides clues as to the cause. Water immersion burns cause a sharp-bordered "glove and stocking" distribution on an extremity. Scalds from "dipping" a child into hot water are clearly demarcated, sparing areas that the child keeps protected (e.g. spared skin folds between inner thighs with burns on buttocks). Children who are help firmly in a tub of hot water may have sparing to the buttocks if they are pressed down onto the bottom of the tub. Grease burns show a pattern of "dripping or running" down the skin or splatter. Cigarettes burns are round and the diameter of the cigarette. Table 2 lists the time required to cause a third degree burn in adults exposed to water at different temperatures.

Table 2

D. Abdominal Trauma: Abdominal trauma results from direct blows to the abdomen. Initially, signs of injury may be minimal until peritonitis develops. Specific injuries include traumatic pancreatitis and pseudocyst, duodenal hematoma, intestinal rupture, and mesenteric injury. Liver laceration or splenic rupture may have more abrupt presentations due to blood loss, but may also be initially overlooked.

E. **Bites:** Human bites must be distinguished from animal bites. Animal bites are usually smaller, deeper, and narrower than human bites and often cause a ripping type of injury. Differentiating a child's bite from the bite of an adult can be difficult. Expert evaluation is advised. Bites should be photographed using a high quality 35mm or digital camera and include a tape measure in the camera field so that accurate measurements can be made. If the bite is fresh and the skin has not yet been washed, saliva from the perpetrator may be present on the victim's skin and is forensic evidence that must be collected. A moistened piece of sterile gauze can be used to swab the skin over the bite. The gauze should be placed into a paper envelope (not plastic) that is labeled with the patient's name, a description of the source of the specimen, the name of the collector and the date/time of collection. The envelope must be sealed and locked in a secure location until given to police.

F. **Head Injury:** The greatest cause of morbidity and mortality from child abuse is inflicted head injury. Inflicted head injury may occur after blunt trauma or as the result of severe shaking and is termed Shaken Baby Syndrome (SBS). Presenting signs include altered mental status, irritability, vomiting, seizures, or respiratory arrest. Signs of external injury are frequently absent in SBS. Retinal hemorrhages are found in approximately 80% of SBS children. Brain imaging by C-T or MRI may demonstrate a subdural and/or subarachnoid bleed, cerebral contusions or diffuse axonal injury. Children with SBS may have other injuries such as rib and metaphyseal fractures.

V. **Evaluation.** Children with suspicious bruising should have a platelet count, PT and PTT to rule out a bleeding diathesis. Children under the age of two years who are suspected child abuse victims should have a skeletal survey to look for occult fractures. The skeletal survey should include an AP and lateral of the skull and thorax, lateral cervical and lumbar spine, AP pelvis, oblique hands and AP views of the arms, legs and feet. A bone scan can augment information obtained by the skeletal survey; and is particularly useful for identifying acute rib fractures. A follow-up skeletal survey obtained 14 days after the initial survey may clarify questionable finding and reveal additional fractures. In addition to an ophthalmologic consultation, a head C-T or MRI scan should be obtained if diagnosing Shaken Baby Syndrome. Head ultrasound is insufficient. If there is any abdominal tenderness or abdominal bruising, SGOT, SGPT and amylase levels, and urinalysis for occult blood should be obtained in addition to appropriate abdominal imaging. The physician must always consider other diagnoses and perform an appropriate work-up to exclude those conditions that can mimic child abuse.

VI. **Reporting.** Physicians are required to report all cases of suspected child abuse to the local child protective services (CPS) or to the police. The physician should not accuse the family of abuse but should explain his/her concerns and the requirement to report. Use statements such as:

"Your child's injuries seem too severe to have been the caused by the incident that you are describing. I am concerned that someone may be hurting your child. Do you have any of these same concerns?"

If the examining physician believes the child's safety may be jeopardized if the family is notified of his/her concerns, the CPS social worker should be informed first. The initial report is phoned to the CPS social worker and followed by a complete written report. The report should describe the injuries observed, the history given and the reason for the report.

Non-medical terminology should be used throughout the report so that social workers, police officers and lawyers can understand the findings and concerns. Physicians are immune from civil or criminal law suits brought by the family for making reports of alleged child abuse if the report is made in good faith.

VII. **Follow-up**. The physician must maintain objectivity throughout the investigation, answer the questions of social workers and police, and be willing to testify in legal proceedings.

VIII. **Disposition.** Once abuse is suspected, the child must be immediately protected from further harm. The CPS worker is responsible for the safety of the child, not the physician. If the child's home is unsafe and the CPS social worker is unable secure safe placement, the physician may choose to hospitalize the child. Some states allow the physician to place a temporary "medical hold" on the discharge of a child, while other states require an order by a juvenile court judge.

Bibliography

Reece, R: Child Abuse: medical diagnosis and management. Lea & Febiger, 1994

Kleinman, P: Diagnostic Imaging of Child Abuse. Mosby, 1998

Bethea L. Primary prevention of child abuse. American Family Physician. 59(6):1577-85, 1591-2, 1999 March 15.

Botash AS. Blatt S. Meguid V. Child Abuse and sudden infant death syndrome. Current Opinion in Pediatrics. 10(2):217 – 23, 1998 Apr.

Oates, K: Influential papers in child abuse. Child Abuse and Neglect 21:319-326 (1997)

Stephenson T. Bialas Y. Estimation of the age of bruising. Archives of Disease in Childhood. 74(1):53-5, 1996 Jan

Sugar NF. Taylor JA. Feldman KW. Bruises in infants and toddlers: those who don't cruise rarely bruise. Archives of Pediatrics & Adolescent Medicine. 153(4):399-403, 1999 Apr.

U.S. Department of Health and Human Services. Child Maltreatment 1997: Reports from the States to the National Child Abuse and Neglect Data System. (Washington, DC: U.S. Government Printing Office, 1999).

INTERNET RESOURCES:

http://www.calib.com/nccanch - National Clearinghouse on Child Abuse and Neglect

http://w3.ouhsc.edu/ccan/page8.html - Directory of child abuse links

http://www.aap.org/policy/05126.html – American Academy of Pediatrics policy on Shaken Baby Syndrome

http://www.ndacan.cornell.edu – National Data Archive on Child Abuse and Neglect