Child Abuse: An Approach for Early Diagnosis

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The importance of early diagnosis in child abuse cases has long been recognized and its importance, as well as the potential sequelae of undiagnosed abuse, is addressed here. Because the family physician is in the unique position of treating a family as a unit, he/she has access to a variety of data that should aid in early identification of child abuse cases. By drawing on studies detailing profiles of the abusing parent, the abused child, their interactions, and the injuries associated with child abuse, a model for such early diagnosis is presented.

Defined as a spectrum of nonaccidental injury and deprivation wrought by the caretaker, child abuse has long been recognized as a syndrome in which early diagnosis is critical.[1] Indeed, in 1957, Caffey, one of the early researchers in the field, underlined the vital necessity of such diagnosis by saying:

> The correct early diagnosis may be the only means by which abused youngsters can be removed from their traumatic environment. . . . Correct early diagnosis may be lifesaving to some of these otherwise helpless youngsters or may prevent permanent crippling injury to others.[2]

Since Kempe described the "battered child syndrome" in the early sixties,[3] the need for early diagnosis has been further reinforced[4] as the sequelae, ramifications, and long-term human costs of abuse are realized and are added to the immediate toll of pain and suffering experienced by the abused child.

First of all, one must remember that an act of abuse is rarely an isolated incident, and that foremost among "sequelae" is the probable repetition of abuse; a child, once battered, has a high risk of being abused again if returned to the abusing adult without active intervention.[5] Indeed Silverman et al cite radiological evidence of multiple fractures, each in a different stage of healing, as a key factor in the diagnosis of abuse, and these x-ray films attest to the repeated attacks that characterize the syndrome.[6] A significant percentage of children subjected to these repeated attacks may ultimately die from their injuries. One compelling statistic comes from a 1973 study by Fontana where it was estimated that one out of every two children returned to the abuser was eventually killed by that adult.[7] Other studies quote mortality ranging between 3 and 11 percent.[8]

For those who survive, however, the statistics are still grim. Kempe originally estimated that 28 percent of abused children are permanently physically damaged—including motor deficits, brain damage, and blindness. Similarly, Caffey feels that cerebral palsy and mental retardation are among the unrecognized sequelae of cerebral injuries in the battered child.[9] Still other battered children may exhibit poor growth and may present as cases of "failure to thrive" with height and weight below the tenth percentile.[10,11]

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Further follow-up has also indicated that many abused children exhibit more subtle long-term "injuries." Although not obviously physically impaired, they do not achieve their full potential and are intellectually "developmentally retarded"; in one study, 42 percent of abused children were so affected.[8] When social and emotional development, however, are measured in addition to intellectual development, the percentage designated "developmentally retarded" may reach 70 percent.

Those children who do survive also have an increased incidence of juvenile delinquency[12] in their teen years. But it is upon reaching adult age that the most dangerous legacy may become apparent; it is the abused child who most frequently becomes the abusing adult.[13]

The key to preventing these sequelae is early diagnosis, and the primary role for the physician in management of the battered child is one of making the diagnosis early so that the child can be protected before serious injury occurs.[14]

The continuum of abuse, however, is wide as is reflected perhaps by the large number of names used to describe the syndrome, including "the battered child syndrome,"[3] "the maltreatment syndrome,"[7] and "the child abuse, neglect, and deprivation syndrome."[12] One may have to draw on different sources of information to make the diagnosis. As Green noted in his 1975 article, the diagnostic problems are not the children who are severely injured; instead it is those children who are less dramatically injured who require the most careful evaluation.[15]

The family physician is in a unique position to observe the multivariate clues that may make possible the early diagnosis of child abuse. Contacts with the family may occur in the Emergency Room or, more importantly, may occur when treating different members of the family in the office. These varied contacts offer access to a wide range of indicators that lead to identification of situations that are at high risk for the occurrence of child abuse.

To facilitate diagnosis, the physician needs an organized approach. By combining data from a wealth of studies on the profiles of abused children, their parents, and their patterns of interactions, with specific physical and radiological findings, one obtains a cohesive schema that follows the basic history/physical medical model. Although no one element in the profile is diagnostic, taken together several may raise the index of suspicion so that further investigation can be pursued.

History

History of Injury

In talking with the parents, the first clue may be their reluctance to give information of any kind and, in some cases, even an angry resistance to requests for even the most basic data. Similarly, they may resist discussing the details of the "accident" and may question the relevance of inquiries regarding the child's past health.[16-19]

If an explanation of the injury is obtained, however, it is frequently incongruous with the physical findings.[16,20] For example, rarely will a "fall" produce two black eyes with no other evidence of bruising to the nose or forehead, nor can a six-month-old climb out of the crib and fall and rupture the spleen. If the explanation given cannot adequately account for the injuries seen, this discrepancy must be seen as a danger sign.

Frequently, in child abuse, there may be a delay in seeking medical advice, and the injury may have occurred anywhere from several hours to many days before medical advice is sought.[12,18] Perhaps as a corollary, several casualty departments have noted a high percentage of late evening-hour presentations in child abuse cases.[7]

The parents' reaction to the child's injury can be noted while the history is obtained and, in cases of child abuse, it is frequently inappropriate, either with marked distress in the face of a relatively minor injury or, more often, an unusual equanimity despite the serious injury (which may be reflected in the delay of seeking medical advice).[12,16-19]

Another characteristic of the child abuse history is that the injury may be blamed on a third party, particularly someone who cannot defend him/herself.[16] The classic example might be an 18-month-old baby with a fractured skull whose injuries are blamed on a 2½-year-old sibling.

Child's Profile and Previous Health

A brief profile of the abused child includes the following data: 90 percent of abused children are under age ten years,[21] and according to Hudson,[22] 70 percent are three years old or younger. Boys and girls are equally subjected to abuse. In school-aged children, the child is often obviously behind developmentally[8] and, indeed, as mentioned before, an abused child may present with failure to thrive.[11,12,19,21]

What other elements in the child's health history may be clues to abuse? First of all, a very early warning sign of a parent's difficulty coping may be frequent office visits for extremely minor complaints.[12,13,21] This may provide an opportunity for early intervention, or, when taken with other signs, may lead to the discovery of signs of abuse.

Similarly, one may find the child is frequently brought to the office or Emergency Room for treatment of injuries caused by "accidents." Doctor shopping and visits to different Emergency Rooms at different hospitals are common patterns in cases of abuse. Despite frequent medical contacts, however, there may be evidence of neglect of basic health maintenance activities, with the child, perhaps, far behind in immunization.[3,12,13,15,16,21]

When describing the child and his past health, the child may frequently be described as a problem child, as, for example, "accident prone," "hyperactive," or "hard to handle." The children may be called "picky eaters," "criers" who are "hard to get along with."[10,18,21] Indeed, Kempe[3] mentions that, classically, a major or minor defect may indeed be present, the child may well have been premature, thus demanding increased care without time for early bonding, or the abused child may have a long history of medical problems that do tax coping skills, such as long-term colic.[18,23,24] Gregg and Elmer,[10] however, felt that the "difficult child" aspect may be overemphasized and that it is the parents' *perceptions* that are important. In their own study of 140 cases of child injury, they found that the abused children did not significantly differ in temperament from children involved in documented accidents except that the abused children actually did tend to be more easily distractable. It is, therefore, important to discuss the child with the parent more in reference to how the child—in health, sex, temperament, or timing of birth—differs from the child they imagined they would have and how they perceive the child's personality, health, and behavior.

Parents' Prenatal and Early Postnatal Behavior

Kempe,[13] Bates,[25] and others have suggested prepartum and postpartum parental characteristics that may help the family physician identify children who may be at risk for future abuse as well as, when used retrospectively, may add weight to the physician's suspicion of actual abuse. Prenatally, overconcern with the baby's sex or IQ, evidence of rejection of the pregnancy, or fears of inability to cope are prominent. In the delivery room, there may be obvious disappointment regarding the child's sex or there may be general apathy. In the postpartum period, apathy, prominence of prenatal concerns (sex, IQ), and evidence of poor frustration tolerance in interactions with the infant may be seen.[12,13,25]

Family Social Background and Parental Characteristics

A recurring theme in families where child abuse occurs is the presence of social instability or discord. Factors may include severe financial problems, unemployment, unplanned pregnancies, or discord between the parents and symptoms of stress, such as drug or alcohol abuse, may be present. Among these families the "density" may be high with two or more children under three years of age. The abused child himself may be the product of an unplanned/unwanted pregnancy. There may be a history of the abuse of a sibling.[3,14,19,20,26-28]

Child abuse has traditionally been seen as more frequent in the lower socioeconomic groups where there may be early termination of formal education and where the elements of social discord, such as financial problems or unemployment, occur more often.[18,23] Although this pattern has been reemphasized in many studies, Steele and Pollock[20] point out that *no* social group is immune, and evidence from history or physical examination indi-

cating that a child may be "at risk" should not be ignored because of a parent's college education.

The parents' background, however, frequently does include a picture of childhood deprivation, abuse, or neglect. Furthermore, one should explore (1) the type of punishment they experienced as children and, (2) their attitudes toward corporal punishment; often, they see physical punishment as their only possible method of discipline. Heavy reliance on physical punishment during the parent's childhood is a theme often occurring in the backgrounds of those who abuse their children.[20,21]

In addition to the parents' backgrounds, the physician should look at the characteristics the parents currently exhibit. Perhaps as an outgrowth of deprivation of his/her own childhood, the abusing parent often has a poor self-image.[28] They often live in poor housing, are very young, and have no close friends or relatives with whom they can gain support.[18,19,26,27] Social isolation and low self-esteem are very common among abusers and cross-cut all socioeconomic boundaries.[14,18] Although personality disorders and immaturity are frequent in abusing parents, perhaps because of their own deprived backgrounds, it should also be remembered that in those rare instances where psychosis is present, the danger of and potential for child abuse are especially high.[12,13]

Parent-Child Interaction

The Parent

In the office or Emergency Room, the family physician has the opportunity to see the child and parent together and behavior patterns can be observed.

Abusing parents often have unrealistic expectations of the child's performance for the child's age and level of development, for example, expecting an 18-month-old to accept pain without crying.[14,19,20,29] Similarly, they display little or no empathy for the child's fears or feelings.[13,16,22] Underlying malevolent motivation may be attributed to the child, for example, "he's crying because he knows it will get to me." This so-called "claiming behavior" may be prominent.[20,29]

In summary, the child, then, is viewed dispassionately, and motivations and unrealistic capabilities are attributed to the child by the parent.

The Child

The abused child rarely seeks comfort from the parent and does not protest the parent's leaving the room.[16,19,22,29] When the parent does leave the room, the behavior may change markedly, the docile child becoming more active or the unruly child becoming calm. But although this behavioral aspect may change, the child remains wary of physical contact with adults and may have the fearful stance of one who is "alert for danger." As Kempe[16] has said, the child is apprehensive and asks "in word and deed 'what will happen next'."

Physical Findings

General Observations

While interviewing the family and observing interaction, one has already begun the physical examination. Preliminary physical clues to deprivation include the child's dress, height, and weight.[7,12,13,19] First of all, clothing may be inappropriate for the weather, poorly mended, or dirty. Secondly, there may be evidence of malnutrition or, more importantly, the child's weight and/or height may fall below the tenth percentile on the normogram for his/her age. Failure to thrive has been linked by several authors to child abuse.[7,11,12,13,30]

Specific Injuries

After a general appraisal of the child's status, examination of specific injuries should be made. The type of injury, several injuries in different stages of healing, and poorly explained injuries provide clues to child abuse.[3,7,13,19,30] Specific injuries to be considered include the following.

1. Cutaneous Injuries

Bruises, abrasions, lacerations, and burns account for more than 70 percent of the injuries in-

duced by abuse.[31] Bruises are especially significant in a child less than one year old who is unable to ambulate and thus, fall and injure himself. Bruises on the face are significant at any age, especially when they occur in the pattern of "manual pressure." This pattern results from the child being slapped or held tightly and shaken. It consists of finger-tip-sized bruises 0.5 to 2.0 cm in diameter, oval or round, occurring in crops on the face, trunk, or arms, and distributed to parallel the imprint of a hand. A fall against an object leaves the imprint of the object, and no accident can simulate this fingertip pattern.[14,18,31,32]

Petechiae may be interspersed with bruises and this pattern is especially common around the ears in battered children. Other key characteristics in abuse induced bruising or other cutaneous injury include:[12,31-33]

A. Circular blebs or burns from cigarettes
B. Two black eyes without forehead bruises
C. Purple ears or faded bruises about the ears
D. Bizarre marks, strap or belt-shaped
E. Petechiae with bruises
F. Bruising in the shape of human bites
G. Tiny tears in the buccal mucosa—in babies given their bottles roughly.

2. Head Injuries

Skull fractures and closed head injuries account for 22.3 percent of the abuse induced injuries reported. Retinal hemorrhages may be the only sign, and any child suspected of having been abused should have an ophthalmoscopic examination.[12] Similarly, subdural hematomas, if small, may present as increased irritability, vomiting, and/or failure to thrive.[2,6,8,31,34]

3. Fractures

The third major category of injury is fractures and, when they occur, they are usually multiple, each in a different stage of healing. The frequency of their occurrence makes the skeletal radiological survey a key component of the child abuse work-up. In addition, a tender swollen joint may be normal on initial x-ray examination, but two weeks later may reveal evidence of subperiosteal hemorrhage as calcification occurs. Therefore, x-ray films should be repeated in two weeks' time even if normal on initial examination.[6,21,30,35]

In a series of 264 abused children in 1974, Akbarnia[30] found the most common abuse induced fractures involved, in descending order, ribs, skull, humerus, femur, and tibia.

Although multiple fractures in various stages of healing are virtually pathognomonic of child abuse, once medical causes of recurrent fractures are excluded, a number of individual fractures and/or fracture characteristics are associated with abuse. These include (1) spiral fractures of the long bones in children less than three years of age; (2) metaphyseal fracture with buckling, impaction, and bone chips indicative of multiple episodes of injury; (3) rib fractures; (4) periosteal avulsion leading to thickening and calcification; and (5) fractures of the thoracic vertebrae.[7,12,30]

4. Intra-Abdominal Injury

Intra-abdominal injury accounts for less than two percent of abuse injuries but is frequently lethal. It can occur without bruising, and the child may simply present with an "acute abdomen." If evidence of trauma is found at surgery, without an adequate explanation, abuse should be suspected.[12,18]

Management

The emphasis of this article is on the development of an approach to identify child abuse cases so that early intervention can take place. Detailed examinations of appropriate modes of intervention appear elsewhere in the literature,[12,13,15,16,19] but the basic principles will be cited here. After diagnosing, the key elements of initial management are first, protection, and secondly, care.[12,13] Protection means that the child be immediately removed from the volatile home situation; hospitalization is frequently the most effective means since it provides protection, an opportunity for treatment, and documentation of injuries (photographs and full skeletal surveys), and yet is not a punitive or confrontary act that could potentially alienate the parents and thereby eliminate the possibility of effective rehabilatory intervention.

Protection also means that the proper local authorities, frequently the Children's Aid Society, be notified immediately so that *care* and intervention can be provided for the child and parents by

specially trained multidisciplinary teams who can evaluate the home situation and plan the course of treatment and action in conjunction with the medical and/or legal personnel. Each physician must be acquainted with the appropriate resources available in his/her community to which suspected cases are to be referred.[12,19]

Sensitivity is critical especially during the early contact if a therapeutic relationship is to be sustained. Parents need help in understanding the problems that have led to abuse and in developing resources that will enable them to successfully adopt the parenting role. The final disposition will ultimately depend upon the parents' capacity for rehabilitation.[16,19]

Summary

The cost in human suffering makes early diagnosis of child abuse, or impending child abuse, imperative. Only in its most florid forms is child abuse easily recognizable; the more subtle cases are more taxing to diagnose. By taking a careful history and by completing careful physical and radiological examinations, however, clues to suspected abuse can be found. Because of the opportunity to know the family and its background, to see the child with the parents, and to be involved both pre- and postnatally, the family physician is in a unique position to gain access to early evidence of child abuse by approaching the diagnosis with a well-organized model. Suspicion of abuse should be aroused by details of the history, the parent-child interaction, the child's overall physical condition, and the nature of the specific injuries and radiological evidence present.

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