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Repeat Visitors to a Pediatric Forensic Medicine Program

REFERENCE: Handy TC, Nichols GR II, Smock WS. Repeat visitors to a pediatric forensic medicine program. J Forensic Sci 1996;41(5):841–844.

ABSTRACT: Since the inception in 1990 of a Clinical Forensic Medicine Program at the Louisville Office of the Kentucky Medical Examiner Program, six children have undergone repeat evaluations for physical injuries. Herein, we examine the overall number of cases from January 1991 through December 1994, and the circumstances and outcomes of the six children undergoing reevaluation. Despite the implementation of an organized Forensic Medicine Program, some children in our area suffer repeated episodes of recognized abuse and death.

KEYWORDS: forensic science, child abuse, forensic medicine, infant death, homicide

This paper presents cases of living children undergoing more than one medicolegal evaluation in the Clinical Forensic Medicine Program of the Louisville Office of the Kentucky Medical Examiner Program. Specifically, it deals with six children, each evaluated more than once for separate and distinct episodes of trauma.

The Clinical Forensic Medicine Program of the Louisville Office of the Kentucky Medical Examiner Program was initiated in 1990. Evaluation of pediatric patients began in 1991. The Clinical Forensic Medicine Program is staffed by the three authors (two forensic pathologists and one emergency medicine physician who completed a one-year Forensic Medicine Fellowship (1)). Evaluations are requested by either law enforcement officers or Child Protective Services social workers.

From January 1991 through December 1994, 316 examinations were conducted on living pediatric patients. We conducted 246 examinations to rule out physical abuse. The remaining 70 cases involved documentation of injuries associated with juvenile versus juvenile assaults, sexual abuse and assault, and other miscellaneous scenarios.

Of the 246 evaluations conducted for suspected physical abuse, the forensic examiner rendered a diagnosis of physical abuse in 130 cases (53%). In 62 cases (25%), the forensic examiner concluded that the injuries were unintentional; that is consistent with the history of accident/incident provided. In 54 cases (22%), the forensic examiner was unable to determine the manner of injury (see Table 1).

TABLE 1—*Forensic diagnosis after examination for possible physical abuse.*

Diagnosis	Number	Percent
Physical abuse	130	53
Unintentional injury	62	25
Undetermined	54	22
Total	246	100

Over the initial four-year period of this program, six children have undergone repeat evaluations for possible physical abuse in different, temporally separate episodes of trauma. These repeat evaluations involved children ranging in age from five weeks to four years at initial evaluation. The elapsed time to reinjury ranged from two to nine months.

Case One

A 17-month-old boy who was the center of a custody dispute was brought to a local hospital emergency department by one parent for evaluation of "burns" of the right foot that occurred while the child was in the care of the other parent.

Examination revealed erythematous areas with focal superficial epidermal loss located over the lateral and medial metatarsal head areas and the fifth digit (see Fig. 1).

The other parent stated that the lesions were the result of new sandals that were brought in for examination. Comparison revealed that the lesions were distributed in the area of the sandal wear (see Fig. 2). Both parents were allowed continued access to the child.

Six months later, the child presented to the same emergency department with an oblique femur fracture after allegedly falling from some steps in front of his home. A single, resolving contusion of the forehead was the only other injury present. The nature of the fracture and the lack of additional trauma raised suspicions of an inflicted injury. Additional investigation by law enforcement was recommended. The manner of this injury remains undetermined.

Case Two

A five-month-old girl was evaluated for unilateral, periorbital edema and several faint contusions consistent with incomplete bite marks. It could not be determined whether these injuries were inflicted by a toddler sibling or an adult caregiver. A skeletal survey was normal, and the child returned home.

Two months later, the child returned to the emergency department for evaluation of a swollen left thigh. There was a history of the mother rolling on the child in bed. A skeletal survey revealed multiple injuries including: an acute, transverse mid shaft femur fracture; a healing distal femur fracture; and healing fractures of

Received for publication 7 July 1995; revised manuscript received 16 Nov. 1995; accepted for publication 8 Feb. 1996.

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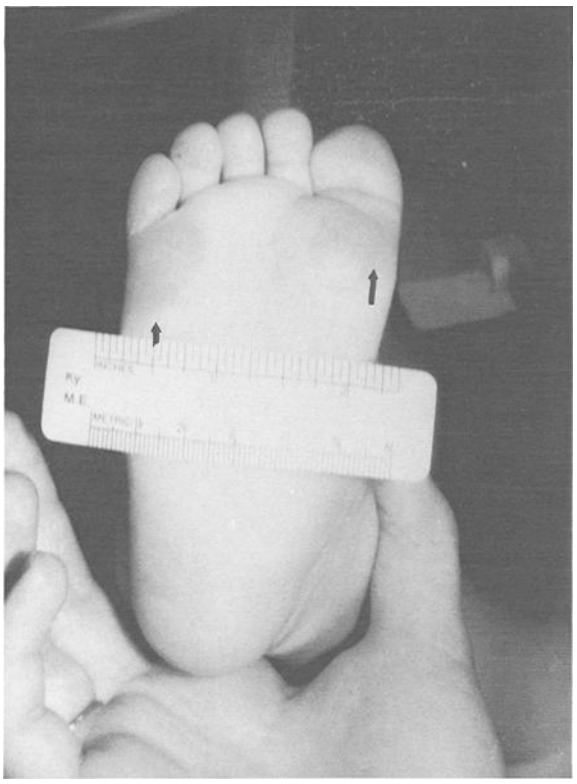

FIG. 1—*Case 1. Erythematous areas over lateral and medial metatarsal head areas of right foot.*

FIG. 2—*Case 1. Right foot in sandal illustrating area of wear.*

the posterior aspects of right ribs six through eleven and the left tenth rib. A diagnosis of inflicted injury was rendered, and the child was removed from the home.

Case Three

A five-month-old boy was brought to an emergency department for evaluation of fever and cough. A chest radiograph revealed healing fractures of the lateral aspects of right ribs two through seven and left ribs three through seven. According to the pediatric radiologist, all bones displayed normal mineralization and density for the age of the infant. No history of trauma could be elicited from the parents. Inflicted injury was diagnosed by the forensic pathologist. The attending pediatrician disagreed, and Child Protective Services allowed the child to return home.

Two months later, the child was evaluated for swelling and faint discoloration of the right parietal scalp. Radiographs revealed a transversely oriented large, irregular fracture traversing the parietal bone. There was no history of trauma. This time, all medical personnel concurred that the injuries were inflicted and the child was placed in foster care.

Case Four

A four-year-old girl was evaluated for burns sustained when, according to the child, her mother poured boiling water on her as a punishment. There were first degree burns of the face, and second degree burns of the anterior thorax, the superior right shoulder, and the superior back (see Fig. 3). The geographic scald burn pattern of the torso lessened in severity inferiorly. After discussion of the case with law enforcement officers, the forensic pathologist concluded that the injury was consistent with the history provided by the child. The child was placed in the maternal grandmother's custody. The court ordered that the mother was not to have unsupervised access to the child.

Nine months later, the child presented to a plastic surgeon's office for ongoing treatment of keloidal scars in the previously burned areas. The plastic surgeon noted a healing, triangular burn of the left aspect of the face. The burn pattern displayed sparing of the recessed periorbital area and small circular areas of sparing around the perimeter. The child stated that her grandmother had allowed the child's mother to "babysit" several days earlier, during which time the mother had applied a hot iron to the child's face. It was again concluded that the injury was consistent with the history provided by the child, and she was removed from the care of her family.

Case Five

A five-week-old female infant was initially evaluated for healing fractures of the posterior aspects of left ribs four through eight and right ribs five through eight. There was an acute fracture of the right ninth rib. A skull series disclosed two variously oriented parietal skull fractures, one of which crossed the sagittal suture. The skull fractures displayed sharp lines of demarcation. Initially,

FIG. 3—*Case 4. Second degree scald burn over torso as a result of boiling water (intervening clothing has been removed).*

no history of trauma was offered. After learning of the results of the skeletal survey, the suspected perpetrator stated that an eleven-month-old sibling had fallen on the infant from a standing position. The forensic pathologist concluded that the injuries were inconsistent with the history given, but were consistent with an inflicted injury pattern. The suspected perpetrator was denied access to the child.

Approximately seven months later, a judge reinstated the suspect's parental rights over the objections of the social worker. The following afternoon, while the child was in the sole care of the suspected perpetrator, the child presented to the children's hospital emergency department in an unresponsive state. There was no initial history of trauma. A computed tomography scan of the head revealed massive cerebral edema. Hours later, the child was pronounced dead. Autopsy revealed an occipital scalp contusion, suture diastasis, bilateral thin subdural hemorrhages over the convexities of the cerebrum, and bilateral retinal hemorrhages. It was concluded that the cause of death was blunt head trauma, and the manner of death was homicide.

Case Six

A six-month-old female infant was taken to an emergency department for evaluation of "red eyes." The emergency medicine physician noted bilateral bulbar subconjunctival hemorrhage and apparent deformity of the right distal forearm. A skeletal survey revealed multiple injuries including an acute fracture of the right radius, a healing fracture of the left radius, and a healing fracture of the left ninth rib. A diagnosis of inflicted injury was rendered, and the child was placed in the custody of the grandmother.

Two months later, the grandmother/custodian allowed the suspected perpetrator to have unsupervised access to the infant in violation of court order. During that time, the infant became unresponsive, and later died at the hospital. Autopsy revealed an acute anterior thoracic spinal disarticulation with surrounding paraspinous granulation tissue containing fresh hemorrhage. There was a large area of hemorrhage and necrosis of the spinal cord in the area of the disarticulation. The perpetrator admitted that he hyperextended the infant "until her head touch (sic) her feet."

Discussion

From 1991 through 1994, the Clinical Forensic Medicine Program performed 246 examinations on 240 children in an effort to elucidate the manner of injury.

Six of the 240 children (6/240 = 2.5%) underwent repeat evaluations. Two of the children (cases five and six) died from the injuries sustained in the second documented abusive assault.

In all six cases of repeat evaluation, the child had returned to the original home environment and suspected perpetrator when the second traumatic episode occurred. The reasons for the child's return home varied (see Table 2). The only reason for return occurring more than once was the custodian's violation of court order. In these two cases (cases four and six), the custodian was a relative who did not perceive the suspected perpetrator as a potential threat to the child. In both instances, the custodian directly violated court order and allowed the suspected perpetrator to have unsupervised access to the child.

TABLE 2—*Cases of repeat forensic examination for possible physical abuse.*

Case	Age*	First DX	Reason Return†	Δt‡, months	Second DX
1	17 mo.	unintentional	forensic dx	6	undetermined
2	5 mo.	undetermined	CPS opinion	2	abuse
3	5 mo.	abuse	conflicting med opinion	2	abuse
4	4 yr.	abuse	court order violation	9	abuse
5	5 wk.	abuse	judicial ruling	7	homicide
6	6 mo.	abuse	court order violation	2	homicide

*Age at initial evaluation.
†Reason for child's return to home after first episode of trauma.
‡Time interval between first and second evaluation.

Conclusion

Physical abuse of children has been well known as a medical/social problem for over 30 years now (2). All 50 states now have mandatory child abuse reporting statutes (3). Despite the medical community's knowledge of the problem and the lay media's intermittent focus on child abuse, children continue to suffer and die at the hands of their caregivers. As this paper illustrates, even a definitive diagnosis of inflicted injury does not ensure the future safety of a child. In both fatalities (cases five and six), the suspected perpetrator of the first assault was alone with the child at the time of the fatal assault. Further, in both instances, criminal charges relating to the first assault were pending against the abusive care giver at the time of the infliction of the fatal injuries by the abusive care giver.

Why do we continue to return children to high risk environments? The Kentucky Revised Statutes state "children have certain fundamental rights which must be protected and preserved, including but not limited to . . . the right to be free from physical, sexual, or emotional injury . . ." (5). Child abuse statutes in Kentucky and most other states give doctors and law enforcement officers wide latitude and civil immunity in the investigation of reported child abuse (6). The statutes allow such procedures as the production of photographs and radiographs (7) and the initiation of a 72-hour hold (without court order) of children who appear to be in imminent danger if they are returned to the person(s) having custody (8).

Further, the statutes in Kentucky give the Court a great breadth of discretion in issuing *ex parte* emergency custody orders and temporary removals (9,10). With good cause, even hearsay evidence is admissable at temporary removal hearings (10). However, it is at this point in the judicial proceedings that the statutory emphasis changes from stressing the protection of the child to preservation of the family. When granting temporary custody, the Court is required to give preference to "available and qualified relatives of the child considering the wishes of the parent or other person exercising custodial control or supervision." (11). This led to two children in this series (cases four and six) being placed with relatives who then violated court order and allowed the suspected perpetrator to have unsupervised access to the child, at which time one child (case four) sustained disfiguring injuries, and another child (case six) was fatally injured. It is remarkable that the Court must defer to the wishes of the suspected perpetrator when attempting to ensure the future safety of the child. Continuing on through the legal process, Kentucky Revised Statutes mandate that "if the court orders the removal of the child or continues the removal of the child, services provided to the parent and the child shall be designed to promote the return of the child to his home as soon as possible" (12).

Perhaps it is time to re-evaluate the goals of our statutes regarding final disposition of cases of dependency, neglect, and abuse. Because of the potential risks to the child, the Court should have greater discretion in determining that certain family units should not be preserved. We, in forensic medicine, are uniquely suited to initiate the call for reevaluation. We are familiar with the legal system, and we see firsthand the tragic outcomes of the system's failures.

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