ATYPICAL FEATURES OF EPIDURAL HEMATOMA IN INFANTS, CHILDREN, AND ADOLESCENTS*

C. D. HAWKES, M.D., AND W. S. OGLE, M.D.

Neurosurgical Service, Methodist Hospital, and the Sub-Departments of Neurology and Neurosurgery, University of Tennessee Medical School, Memphis, Tennessee

(Received for publication May 31, 1962)

The clinical picture of epidural hematoma in infants, children and even in teenagers often fails to follow the classic description of this condition. The typical "lucid interval" is much more frequently absent than it is in adults. The effect of the condition in these patients is often so insidious in its onset as to make this a very treacherous lesion to recognize in young individuals. Furthermore, the patient's condition may worsen very abruptly. Prompt action is necessary to avoid residual paralysis, post-traumatic seizures or other significant residual effects. Indeed, death may occur if this condition is not recognized early and timely surgical intervention is not undertaken.

Epidural hematoma may occur as a result of head trauma at any age. It sometimes is seen in newborn infants as a result of birth trauma. Although it is rare under such circumstances, survival is possible only through immediate surgical treatment. Campbell and Cohen\(^2\) reported such a case in a newborn infant with a depressed fracture of the skull following application of obstetrical forceps in a breech delivery in which surgery was lifesaving. However, it is the purpose of this paper to deal with epidural hemorrhages that occur in young individuals from infancy through the teens as a result of acquired trauma. Our earliest experience in this connection was with a child 3 months of age (Case 1) with a depressed fracture of the skull and an accompanying epidural hematoma (Fig. 3). A more dramatic instance, however, occurred in a girl of 9 months (Case 2) who sustained a linear fracture of the skull as a result of a fall from a high chair. The middle meningeal artery was torn and a massive epidural hematoma extending from the coronal to the sagittal to the lambdoidal sutures resulted (Fig. 4).

The patients reported in this series comprise a group extending through teenager because the same problems of diagnosis and treatment occur in an 18-year-old as in an infant or child. Case 16 was an example of this. The patient was an 18-year-old youth who suffered multiple fractures of the skull when a truck tire he was repairing exploded but it was not until after 5 days of careful observation that focal left-sided seizures led to the diagnosis of an epidural hematoma.

CLINICAL MATERIAL

This review of the problem of epidural hematoma in young individuals is based on a study of 16 patients, 3 months to 18 years of age, seen over a period of 15 years (Fig. 1). Two of these patients died. These patients were aged 13 (Case 8) and 17 (Case 15) when death occurred 4 and 8 hours following trauma (Fig. 2). The clots were placed posteriorly in both fatal cases. Four patients had significant neurological residua. One boy aged 7\(\frac{1}{2}\) years (Case 4) deteriorated rapidly before our eyes while the operating room was


Fig. 1. Age distribution in 16 cases of epidural hematoma in patients 3 months to 18 years old.
being readied and had residual spastic weakness in the left leg. The two others, aged 16 (Case 13) and 17 (Case 14), each had residual weakness in the upper extremity. The fourth patient, aged 14 (Case 10) exhibited a residual personality disorder with aggressive behavior and lack of conformity in social situations, requiring special schooling. One patient, aged 18 (Case 16), had persisting brief local seizures in the upper extremity 2 months after injury. He then was lost to follow-up. In 1 patient, aged 14 (Case 9), convulsive seizures developed 7 years after injury. These were controlled readily with anticonvulsant medication.

CASE REPORTS

Case 1. RGE. A 3-month-old white male was injured by a falling swing, sustaining a hematoma in the right parieto-occipital area of the head. The period of unconsciousness was brief. The child cried promptly, but subsequently became drowsy. Initial examination did not reveal any localizing signs.

He was admitted to the hospital for observation. Roentgenograms demonstrated a markedly comminuted fracture of the right posterior parietal area (Fig. 3). During the first 24 hours of observation, vital signs remained stable and a few episodes of twitching of the extremities occurred.

Forty-eight hours after injury operation was performed with elevation of the depressed comminuted fracture of the skull and evacuation of a widespread epidural hematoma.

Recovery was uneventful. The child was last seen 4 years following operation and no residual effects were apparent.

Comment. Case 1 exemplifies the frequent association of epidural hematoma with mildly depressed comminuted fractures of the skull in infants and young children. Adequate initial surgical treatment will prevent lasting residual effects in these patients.

Case 2. MDP. A 9-month-old white female was injured early one morning in a fall from a high chair. Initial examination revealed a large subgaleal hematoma of the right mastoid area. Roentgenogram of the skull suggested a linear fracture. There was equivocal weakness of the left arm. Later on the same day it was reported that ptosis of the right lid, external squint of the right eye, and weakness of the left arm had developed. Following this, deterioration of her condition was rapid.

She was admitted immediately to the hospital and operation was performed. A large extradural hemorrhage extending from coronal to the sagittal to the lambdoidal sutures was evacuated (Fig. 4). Recovery was prompt and uneventful.

Comment. Case 2 exemplifies the ready stripping of the dura mater from the inner table of the skull which may occur in infants with epidural bleeding causing massive formation of hematoma leading to rapid deterioration of neurological status and an early fatal outcome if prompt surgical intervention is not undertaken. On the other hand, such patients recover with a remarkable celerity once the clot is removed.

Fig. 2. Chart showing lapse of time between injury and onset of symptoms of epidural hematoma in the 16 infants, children and adolescents in this study. The smaller insert shows the lapse of hours in the cases in which the patients were operated upon or died in less than 6 hours. It is to be noted that both fatal cases fell in the group of less than 24 hours in duration.

Fig. 3. Case 1. Roentgenogram showing mildly depressed fracture of skull in 3-month-old child which was accompanied by an epidural hematoma.