SUBDURAL EMPYEMA IN INFANTS*

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Subdural empyema is an uncommon condition. In a series of 139 cases of intracranial suppuration, Kiser and Kendig (1963) found only 5 cases of subdural abscess. The incidence of subdural empyema in major centers is about 1 to 3 per year (Hitchcock and Andreadis 1964, McLaurin 1969, Bhandari and Sarkari 1970). The incidence of this disease in infants and children is very low; 3 of 29 patients of Hitchcock and Andreadis (1964) and only one of 18 patients of McLaurin (1969) were below 10 years. In this paper are reviewed 11 cases of subdural empyema in infants treated from 1956 to 1968.

Etiology

Subdural empyema is never primary. The common sites of primary infection are the paranasal sinuses and middle ear and osteomyelitis of the skull (Hitchcock and Andreadis 1964, Bhandari and Sarkari 1970). A few cases result from miscellaneous conditions like infections around the face and neck, infection of a subdural hematoma and direct implantation of a foreign body. The primary foci of infection were known in 7 cases. These included multiple abscesses of the scalp and other parts of the body in 2, abscess of the axilla in one, meningitis in one, osteomyelitis of the femur in one and osteomyelitis of the skull in one.

The potential subdural space is relatively free over the convexity and along the falx, whereas over the base it is practically nonexistent. Purulent collections therefore are found frequently over the frontoparietal regions and rarely on the medial surface along the falx (Keith 1949, Hitchcock and Andreadis 1964). The empyema was located over the convexity in all of our cases; 2 on the right side, 5 on the left, and 4 bilateral. Bilateral subdural empyema is uncommon. Keith (1949) found one bilateral case among 7 of subdural empyema. Among 37 cases 3 were bilateral in the series of Bhandari and Sarkari (1970).

Subdural empyema may sometimes be associated with an intracerebral abscess or with meningitis. A cerebral abscess was present in one case in our series and meningitis was present in 4 cases, including the one with cerebral abscess.

Bacteriology

Streptococci were the most common pathogens (Schiller et al. 1948, Hitchcock and Andreadis 1964) while in some series staphylococci predominated (Woodhall 1967). No organisms were grown in 4 of our 9 patients in whom the pus was cultured. The bacteria grown in the other 5 cases were staphylococci in 2, Ps. pyocyaneus in 2, E. coli in 1 and aerobic spore bearers in 1. Culture was negative

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in 16 of 35 cases of Woodhall (1967) and in 4 of 23 cases of Hitchcock and Andreadis (1964).

Clinical Features

Age and Sex. Subdural empyema has been found in all age groups (McLaurin 1969). In our series which concerns only infants and children the age ranged from 2 to 18 months. Nine of them were male children. The preponderance of males was emphasized by others also (Hitchcock and Andreadis 1964, McLaurin 1969).

Symptom and Signs (Table 3). The duration of symptoms ranged from 5 days to 6 months. The earliest age at onset was the 5th day of life. An increase in the size of the head was the commonest complaint (9 cases). Fever (8 cases and fits (6 cases) were the other common features. Three each had vomiting and drowsiness, 4 unconsciousness, and two each papilloedema and hemiparesis.

Examination showed hydrocephalus in all of them with a tense fontanelle and widening of the sutures. In 4 the 7 patients with unilateral empyema the coronal suture on the same side was more widened than on the normal side. This unilateral diastasis is a useful diagnostic sign of a space occupying lesion on that side.

It is significant that papilloedema and neurological deficits were found only in 2 instances each, despite large collections of pus in the subdural space. This is due to the fact that the sutures have widened to accommodate the accumulating pus. Hence the absence of papilloedema and neurological defects should not mislead one to think of a non-space-occupying lesion.

Consciousness. The level of consciousness is one of the most important factors determining prognosis. Only 4 of the 11 children were conscious on admission, three being drowsy and four unconscious with extensor rigidity. This indicates the delayed referral of these children to the neuro-surgeon. This is also borne out by the fact that these children were in poor general condition, with dehydration resulting from vomiting, fever and inadequate feeding.

Diagnosis

The possibility of subdural empyema should be entertained whenever an infant is brought with an increasing size of the head, bulging fontanelle, fever and fits and changes in the sensorium, with relatively minimal localising signs. Asymmetrical sutural diastasis is an important diagnostic sign in unilateral empyema. An immediate subdural tap through the lateral angle of the anterior fontanelle or widened coronal suture will clinch the diagnosis, and provides pus for bacteriological studies. Aspiration of the pus will provide cerebral decompression. If the general condition of the child permits, a pyogram done at this stage will delineate the extent of the abscess. This was the line adopted in 8 of our patients. Pyogram was not done in the other 3 patients because of their poor general condition.

Cerebrospinal fluid studies are not generally useful as meningitis is uncommon in these cases, though signs of meningeal signs may be present (McLaurin 1969). If meningitis is suspected, lumbar puncture should be performed only after subdural decompression to prevent cone formation. McLaurin (1969) found an elevated spinal fluid