

INTRAVENTRICULAR HEMORRHAGE IN PRETERM INFANTS

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Periventricular and intraventricular hemorrhage (SEP/IVH) is detected in 40 to 50% of infants with birth weight less than 1500 gms. The short term outcome of infants with IVH varies widely,

In order to understand the natural history of SEP/IVH, we designed a prospective study to determine its incidence, onset, extent, mortality and the evolution of dilated ventricles in the survivors.

Materials and Methods

Three hundred and thirty-nine (339) outborn infants with birth weight of less than 2000 gms or gestational age of less than 34 wks were included in the study during October 1980 to August 1983. An Advanced Technology Laboratory (ATL) Mark III real time ultrasound scanner with a 5 MHz transducer was used to study the brain of these infants within minutes of admission and daily for 7 days, if hemorrhage was detected, patients were scanned twice a week until discharge and at follow-up clinic as out patients concomitantly with neurological and psychomotor evaluation. The brain was examined in 2 planes, coronal and sagittal cuts through anterior fontanelle. Pictures were taken by Matric Instrument Video Imager. The grading of hemorrhage follows that of Papile(1). Abnormal ventricular dilatation in our study is defined as the size of the body of lateral ventricle greater than 5mm.

Result:

Birth weight and IVH (table 1)

The incidence of IVH and its mortality is inversely related to birth weight and gestational age. The mean gestational age of IVH infants was 28.3 weeks. The frequency of IVH in infants with birth weight of below 1500 gms was 58% of which 40% died. While only 12% of infants above 1500 gm developed IVH and there was no mortality at this weight group (B.W. 1501-2000 gms). The mean gestational age of the expired infants was 26.7 wks. The mortality was not entirely due to IVH.

Onset of IVH

Ninety-nine (99) of 135 IVH infants were admitted to our nursery before 12 hours of age and were studied. Approximately one third of hemorrhages occurred in the first 12 hours of life, seventy-two (72%) percent by 24 hours of age and 93% by 72 hours of age. Only one infant developed IVH after 7 days of age. This infant developed severe hypertension (Systolic BP of 200 mmHg) on the 11th day

of age as the result of renal artery thrombosis.

Severity of IVH and Related Mortality

The incidence of IVH was almost evenly distributed among grade I to IV. Neonatal mortality associated with large hemorrhage (grade III and IV) was 52% which was greater compared with 18% in infants with IVH grade II or less.

Regression Time of Dilated Ventricles

Spontaneous regression of dilated ventricles occurred in 17 infants. The mean age of onset of regression was 40 days after the onset of hemorrhage with a range of 17 to 90 days (median 38 days). Complete resolution (ventricles return to normal size) was seen in 16 of 17 infants. The mean age of complete resolution was 106 days after initial hemorrhage with a range of 29 to 196 days (median 89 days).

Natural History and Outcome of IVH

The total mortality rate of 135 infants with IVH was 39% (53/135). Among the 82 survivors, 31 had grade I hemorrhage and 51 had grade II to IV hemorrhage. Thirty-five of 51 grade II to IV IVH infants showed no sign of progressive ventricular dilatation after 7 days of hemorrhage. The remainder (16 infants) developed progressive dilatation and of which 4 infants spontaneously resolved without treatment. Twelve required repeated spinal or ventricular taps to relieve increased intracranial pressure which was evidenced by tense fontanelles. Three eventually required ventriculo-peritoneal shunt. Among the grade II to IV survivors 94% (48/51) recovered with or without treatment and only 6% (3/51) required surgical intervention.

Table I. Birth Weight Related Incidence of IVH & Its Mortality

<u>B.W.</u>	<u>No</u>	<u>IVH (%)</u>	<u>Mortality</u>	
			<u>Neonat (%)</u>	<u>Infant(%)</u>
500-750	28	24 (85)	19 (79)	19 (79)
751-1000	58	46 (79)	19 (41)	22 (48)
1001-1500	114	46 (40)	9 (19)	12 (26)
1501-2000	139	17 (12)	0 (0)	0 (0)
All weight	339	133 (39)	47 (35)	53 (40)

Reference: 1. Papile LA et al: Incidence of subependymal and intraventricular hemorrhage: A study of infants with birth weight less than 1500 gm. J. Pediatr. 1978: 92:529.

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