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ANALYSIS OF CONTINUOUSLY RECORDED NEONATAL ELECTRO-ENCEPHALOGRAPH MAY PREDICT OUTCOME AT 18 MONTHS
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A continuous two channel record of the EEG was made for the first 5 days after birth in 105 babies. 25 were clinically well; gestation 26-42 weeks (mean 35), birth weight 990-4120 g (mean 2410). Between August 1981 and July 1983 80 babies were selected at random from 399 who received intensive care; gestation 26-42 weeks (mean 33), birth weight 550-4200 g (mean 2050 g). The normal pattern of EEG in the first 5 days at different gestation ages was determined by analysis of 25 well babies' records. To determine if the EEG predicts death or disability we analysed the EEG of the 80 ill babies for the presence of seizures and duration of abnormal activity which we graded as mild, moderate or severe. Detailed assessment of survivors was made independently at 18 months. All 25 well babies were normal. Of the 80 ill babies 19 died, 20 were abnormal, 37 were normal and 4 lost to follow-up. Multiple step-wise logistical regression of 30 variables identified six factors related to outcome. In order of significance these were: Duration of severe and moderate EEG abnormality; duration of seizure activity; abnormal cerebral ultrasonogram; umbilical cord pH, need for resuscitation and days ventilated. These factors predicted outcome in 71%. In those with seizures predictive accuracy was increased to 87% by including the number of days on which seizures occurred, the day of onset and the presence of a seizure discharges. The EEG in the first 5 days can give early and quantitative information that may improve the prediction of outcome at 18 months.