



PROGNOSTIC ROLE OF SPECTRAL ANALYSIS OF THE EEG IN PREMATURE INFANTS

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Introduction

Brain maturation at early stages may be assessed by changes in spectral power frequencies of electroencephalogram (EEG) (Scher et al., 1997), but their predictive value for later outcome remains poorly understood.

Aim

To correlate neonatal spectral power values with developmental scores obtained at one year in infants born premature.

Methods

EEG was recorded on twenty infants (23–34 weeks) at 35 post-conceptual weeks. In order to minimize handling, one bipolar channel (C3-C4) was recorded. Data were transformed into frequency domain using a Fast Fourier Transformation algorithm and divided in delta (0.5-4Hz), theta (4-8Hz), alpha (8-13Hz) and beta (13-30Hz) bands. As infants attained 12 months corrected age they underwent the Griffiths Mental Development Scales. Relative spectral power values recorded in the neonatal period were correlated with developmental scores.

Results

Relational skills and personal self autonomies sub-scale score correlated negatively with delta ($r=-.60$, $p=.01$) and positively with beta ($r=.64$, $p=.007$) and alpha ($r=.63$, $p=.006$) power values.

Conclusions

Data on minor impairments in premature infants indicate a great incidence of psychiatric disorders later in life (Bhutta et al., 2002); the association of neonatal spectral power values with Griffith's scores suggest a possible prognostic role of EEG spectral analysis in neonates born prematurely.