

Sleeping position and electrocortical activity in low birth weight infants.

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Objective: To evaluate the effects of prone and supine sleeping positions on the electrocortical activity during active (AS) and quiet sleep (QS) in low birth weight (LBW) infants. DESIGN: Randomized/crossover study Setting: Infant Physiology Laboratory at Children's Hospital of New York. Patients: Sixty three healthy, growing LBW (BW=795-1600g) infants, 26-37 weeks in gestational age. Intervention: Six hour continuous 2-channel electrocortical recordings, together with minute-by-minute behavioral state assignment, were performed. The infants were randomly assigned to prone or supine position during the first 3h and positions were reversed during the second 3h. Outcome measures and results: Fast Fourier Transforms of EEG were performed each minute and the total EEG power (TP), spectral edge frequency (SEF), absolute (AP) and relative powers (RP) in 5 frequency bands: 0.01-1.0 Hz, 1-4 Hz, 4-8 Hz, 8-12 Hz, 12-24 Hz were computed. Mean values for TP, SEF, AP and RP in the five frequency bands in the prone and supine positions during AS and QS were then compared. In the prone sleeping position, during AS, infants demonstrated significantly lower TP, decreased AP in frequency bands 0.01-1.0 Hz, 4-8 Hz, 8-12 Hz, 12-24 Hz, increased RP in 1-4 Hz and a decrease in SEF. Similar trends were observed during QS, though they did not reach statistical significance. Conclusions: The prone sleeping position promotes a shift in EEG activity towards slower frequencies. These changes in electrocortical activity may be related to mechanisms associated with decreased arousal in prone position and, in turn, increased risk for sudden infant death syndrome.

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