

Heart rate and heart rate variability during sleep in small-for-gestational age newborns

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To assess the influence of intrauterine growth retardation on heart rate (HR) and HR variability during sleep, we performed polygraphic recordings in 10 small-for-gestational age (SGA) and 16 appropriate-for-gestational age (AGA) newborns. Both groups were clinically and neurologically normal and were at 37 to 41 wk conceptional age. RR intervals were analyzed using the short-time Fourier transform in three frequency bands: 1) high frequency, with a period 3-8 heartbeat; 2) mid frequency, with a period 10-25 heartbeat; and 3) low frequency, with a period 30-100 heartbeat. In both active and quiet sleep, SGA newborns significantly differed from AGA newborns by having a shorter RR interval ($p < 0.01$) and lower amplitude of HR variability in all bands ($p < 0.05$) except low frequency in quiet sleep. Quiet sleep differed from active sleep by having a longer RR interval ($p < 0.05$), higher high-frequency variability ($p < 0.02$) in both SGA and AGA newborns, and lower low-frequency variability