

ABSTRACT

Two biomarkers are provided for obstructive apnea. A first biomarker determines amplitude and timing of inspiratory efforts from a bioelectric signal. The respiratory rate is compared with a normal pre-detection rate, and the amplitude of the effort is compared with a normal amplitude. The obstructive apnea is likely present if a series of inspiratory efforts are above a normal amplitude and with increasing amplitude, but at a normal rate. A second biomarker determines heart rate and respiratory rate. A normal lower threshold for heartbeat interval is established, and if subthreshold events occur (short RR intervals), a commencement time for each sequence of subthreshold events is compared for a respiratory rate-normalized window. If the number of subthreshold events exceeds a minimum for the window, obstructive apnea is likely present.

[Figure 10]