Clinical Experience with New Technology For Recording Un-Sedated ABRs

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ABSTRACT
We recorded the auditory brainstem response (ABR) without sedation from 103 children using the Vivosonic Integrity device. Neuro-diagnostic and/or threshold ABR measurement was also conducted for 100 adults with suspected non-organic or retrocochlear auditory dysfunction. For over 90% of the children, reliable ABR findings contributed to timely management decisions. Availability of un-sedated ABR measurement altered pediatric referral patterns, reducing demand for ABR with sedation or anesthesia, and significantly reducing wait time. Un-sedated ABR is clinically feasible and valuable.

MATERIALS AND METHODS
Subjects were a series of 110 children who underwent ABR recording with the Vivosonic Integrity device. Patient age ranged from newborn infants to 7 years (mean of 1.1 years). 53% were males and 47% females. Sleep deprivation techniques were regularly employed, but none of the children received controlled sedatives prior to data collection.

RESULTS
Distribution of subjects by state of arousal during ABR recording was: 72% = resting (but not sleeping), 16% = awake and moving; 12% = sleeping.

The ABR test protocol consisted of conventional stimulus and acquisition parameter (including click and tone burst stimulation), but with the addition of special Vivosonic features (Amplitrode® electrodes, the Vivolink Bluetooth device, and Kalman filtering).

CONCLUSIONS
Our findings and clinical experience support the following conclusions:

- Availability of the Vivosonic integrity reduces the need for sedation or anesthesia for ABR measurement by up to 66%
- An ABR in the resting state can be performed for < 10% of the cost of an ABR under light anesthesia
- Availability of the Vivosonic Integrity reduces the wait time for ABR assessment from > 2 months to < 3 weeks
- ABR recordings with the Vivosonic Integrity provide useful information contributing to management decisions in over 90% of the children scheduled for the procedure