

Title: Clinical utility of electroretinograms for evaluating vigabatrin toxicity in children

Background: Vigabatrin is an anti-epileptic drug approved for the treatment of infantile spasms and refractory complex seizures in the pediatric population. Unfortunately, visual field defects, electroretinogram (ERG) findings, and retinal changes associated with vigabatrin use have been well documented in the literature. In response to reports of adverse ocular effects, ophthalmologists and neurologists resorted to performing ERGs with general anesthesia every 3 – 6 months as a screening tool for vigabatrin induced retinal toxicity in nonverbal pediatric patients.

Objective/Purpose: Given the high cost of ERG screening and risks of general anesthesia, this study sought to determine if there are changes in clinical management in response to ERG results.

Methods: We retrospectively reviewed the medical records of patients who received ERGs at Children's Hospital of Colorado from 2009 to 2012. Age, indication for ERG, ERG data, and clinical management of vigabatrin were extracted from the records. ERGs were interpreted according to LKC Technologies normative values. A physician trained in ERG analysis interpreted each ERG.

Results: One hundred and seventy ERGs were performed during the study period, and 147 ERGs were available for analysis. Every patient received general anesthesia for the procedure. Thirty-three ERGs were performed in 29 patients specifically as screening for retinal toxicity due to vigabatrin use, and 30 were available for analysis. Within this cohort, only 2 ERGs were normal (6.6%), and 28 were abnormal (93.3%). In patients who received abnormal results, 1 patient discontinued vigabatrin in response to the screening.

Conclusions: In our study cohort, clinical management generally did not change in response to an abnormal screening result. Given the need for general anesthesia in the pediatric population receiving ERG testing, and minimal change in clinical decision making in the face of abnormal results, ERG screening for retinal toxicity due to vigabatrin in the pediatric cohort should be reconsidered.

Significance: ERG screening for vigabatrin induced toxicity is costly, not without risks, and does not change clinical management, and thus, should not be performed.