VEP Testing in Clinical Practice

Objective VEP Testing for Possible Malingerer Reveals Sight-Threatening Condition

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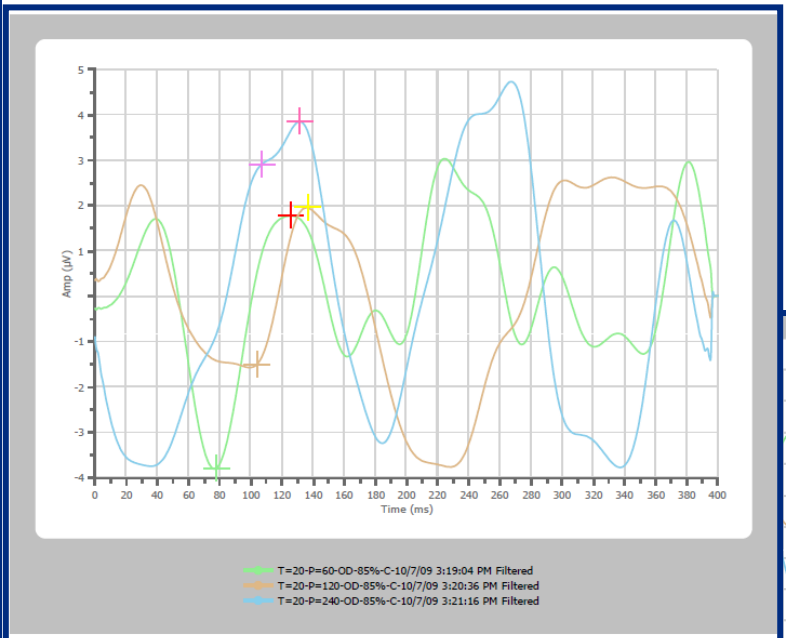
Introduction: A 9-year-old male patient was seen for a vision examination upon his school's recommendation. The patient had been having trouble seeing whenever he was engaged in close work. When asked about symptoms, the child explained that one day he "just woke-up and couldn't see!" He had been followed for several years by a neurologist for migraine headaches and was being treated with antihistamines by his primary care physician for allergies. He did not report having any headaches at the time of the examination nor did he have them in the weeks leading up to his appointment. His social history included frequent moves to several different living environments over the past three months together with his single mother. Because of these moves, the patient's mother noted that these last few months had been rather unsettling and stressful on the family. The child, however, did not seem to be at all distraught. On the contrary, he seemed to enjoy the attention he was getting during his appointment with me over his sudden "vision problem."

Findings: My initial evaluation found entering, unaided acuities of 20/200 for each eye at far and at near. His responses appeared to be rather exaggerated as his visual acuities were inconsistent and were obtained only through much gentle prodding. Pupillary responses were normal for each eye. Confrontation fields were highly variable and considered to be unreliable. EOM's were full for each eye. A mild left exotropia was noted at far and low exophoria was noted at near along with a receded nearpoint of convergence. Retinoscopy showed no refractive error for either eye. Ophthalmoscopy revealed moderately deep cupping with an estimated 0.5 cup–to-disc ratios observed in each eye and normal maculas.

Suspicious that the patient could be malingering and possibly exaggerating his symptoms and responses as a way to gain attention, I asked to see him again in a week. At this next visit, the patient's acuities were slightly better at 20/100 OD and OS, and were obtained with much struggling in order to achieve this acuity level. Again, the child remained rather jubilant with an attitude that seemed to enjoy the attention he was getting during the examination procedures. A third appointment was then scheduled a week later for Diopsys® NOVA-TR visual evoked potential (VEP) vision testing in order to rule-out malingering.

VEP Testing in Clinical Practice (cont.)

The VEP testing showed abnormal waveforms for all levels, and significantly delayed P100 latencies which deteriorated with smaller patterns, especially for the left eye.



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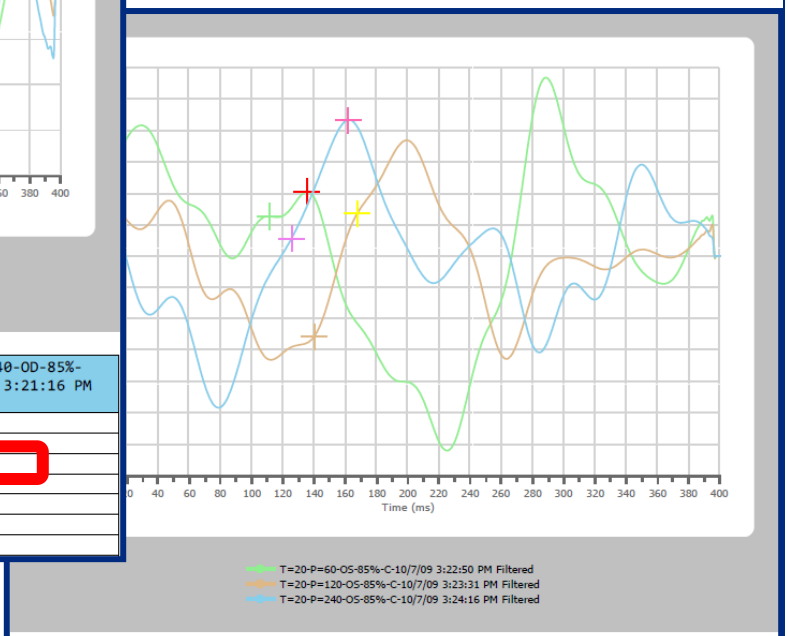
Left Cursor	Lat	78.0 ms	104.3 ms	107.3 ms
Right Cursor	Lat	125.8 ms	136.5 ms	131.6 ms
	Amp	1.77 uV	1.99 uV	3.85 uV
Delta	Lat	47.8 ms	32.2 ms	24.4 ms
	Amp	5.57 uV	3.44 uV	0.94 uV
Eye		OD	OD	OD

Right Eye (OD)
60, 120 and 240 Check Size



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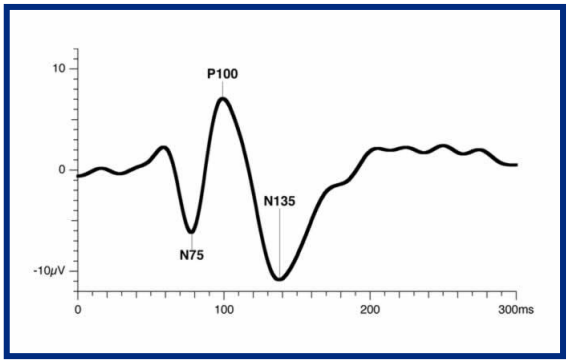
Left Cursor	Lat	112.1 ms	140.4 ms	125.8 ms
Right Cursor	Lat	135.5 ms	167.7 ms	161.9 ms
	Amp	2.04 uV	1.54 uV	4.55 uV
Delta	Lat	23.4 ms	27.3 ms	36.1 ms
	Amp	0.79 uV	3.89 uV	3.77 uV
Eye		OS	OS	OS

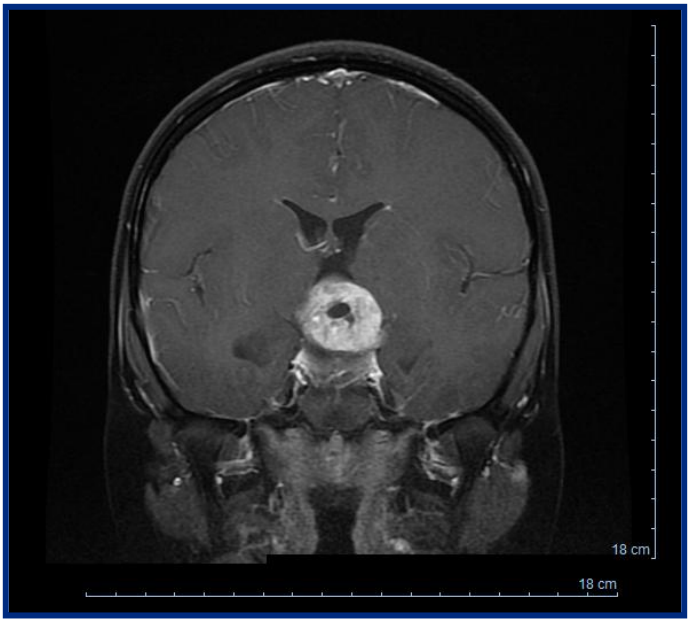
Left Eye (OS)
60, 120 and 240 Check Size

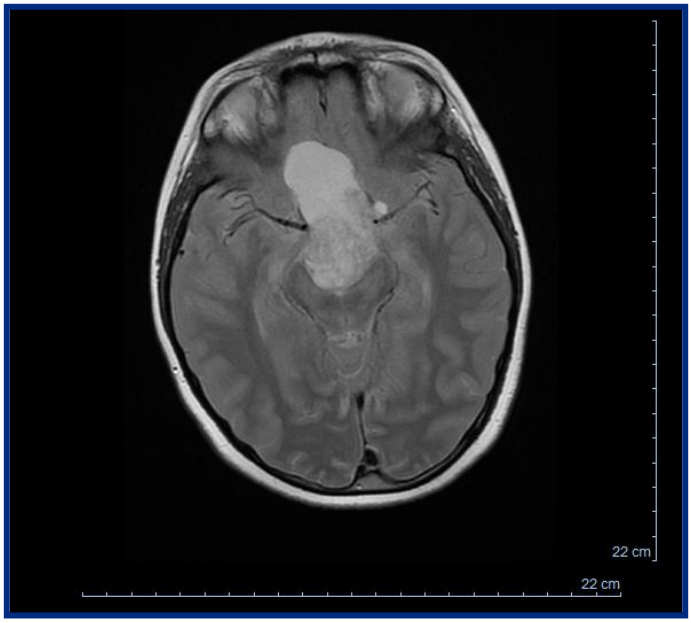


Normal Pattern Reversal VEP Result for Comparison from ISCEV Standard for Clinical Visual Evoked Potentials

VEP Testing in Clinical Practice (cont.)

Diagnosis and Treatment: I called the patient's neurologist and arranged for him to be seen the next day. The neurologist ordered an MRI and discovered what appeared to be a large craniopharyngioma of the pituitary gland which was impinging on the optic chiasm. An immediate referral to the Mayo Clinic for surgery was made which resulted in removal of the tumor along with the entire pituitary gland.





A post-operative visit was made for the patient approximately 2 ½ weeks after surgery, at which time his uncorrected acuities were found to be 20/20 OD and 20/150- OS. The patient remarked that he felt the vision was back to normal in his right eye, but he could only see "half of things" through his left eye. The patient was subsequently lost to follow-up.

This case exemplifies the necessity of an objective, functional test. The Diopsys® NOVA-TR VEP recordings were able to uncover a serious sight and life-threatening condition in a young boy who at the time of his examination was under the care of a neurologist, reported no headaches and exhibited the embellished behaviors of a malingerer.

About the Author: Dr. David Biberdorf graduated with honors from the Southern California College of Optometry and has been practicing in Grand Forks, ND since 1988. Dr. Biberdorf is a board certified Fellow in the College of Optometrists in Vision Development and has sub-specialized in the treatment of children with learning-related vision problems, strabismus and amblyopia for over twenty years. In addition to his clinical practice, Dr. Biberdorf is actively engaged in research on vision, attention and reading at the University of North Dakota.