
Principles and Practice of Clinical Electrophysiology of Vision

Editors

JOHN R. HECKENLIVELY, M.D.
Professor of Ophthalmology
Jules Stein Eye Institute
Los Angeles, California

GEOFFREY B. ARDEN, M.D., PH.D.
Professor of Ophthalmology and
Neurophysiology
Institute of Ophthalmology
Moorfields Eye Hospital
London, England

Associate Editors

EMIKO ADACHI-USAMI, M.D.
Professor of Ophthalmology
Chiba University School of Medicine
Chiba, Japan

G.F.A. HARDING, PH.D.
Professor of Neurosciences
Department of Vision Sciences
Aston University
Birmingham, England

SVEN ERIK NILSSON, M.D., PH.D.
Professor of Ophthalmology
University of Linköping
Linköping, Sweden

RICHARD G. WELEBER, M.D.
Professor of Ophthalmology
University of Oregon Health Science Center
Portland, Oregon

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Sponsoring Editor: David K. Marshall
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CIP

Patient Management and
Electroretinographic and
Electro-oculographic Testing

Management of Patients for Testing

Deidre A. Martin

In clinical electrophysiology, in order to collect reliable data, a researcher must be able to work with people and ask them to perform sometimes tedious and uncomfortable tests. An electrophysiology laboratory will typically offer standard examinations of color vision testing (AO H-R-R Pseudoisochromatic Color Plates, Farnsworth-Munsell 100 Hue Test [FM-100], and Nagel Anomaloscope), electroretinogram (ERG), electro-oculogram (EOG), variable or full dark adaptometry (VDA), and the visually evoked cortical potential (VECP). To complete all of these examinations on one person would take a full workday. It is essential for the examiner to establish a good relationship with the patient as soon as he enters the room.

Every effort should be made from the start to put the patient at ease. Introductions should establish whether the mode of address should be formal or informal. Whichever is more comfortable for the patient should be used, and the patient should be given an opportunity to become oriented to the laboratory setting. In particular, the procedures should be described clearly and concisely. The examiner's description should be adapted to the age, intelligence, and apprehension level of the patient. Some patients are well informed prior to their visit to a specialized laboratory and appreciate a more sophisticated explanation. Others want only minimal information. Most people want some reassurance that the testing will not be painful.

For most subjects a basic explanation is all that is needed. My standard description of the ERG is as follows.

"The ERG is a measurement of the activity from the back of the eye (the retina) when it is stimulated by light. When we look at that activity in the dark, it

will tell us about that part of the retina that allows you to have night vision. Then we will look at the activity in the light, which will tell us about that part that gives you your central and color vision. The way I pick up the information is by using a contact lens electrode. You won't feel the lens because I will give you a special numbing drop. You will only feel slight pressure against your lids that feels strange but doesn't hurt."

This varies, of course, depending on the age of the patient, but the information remains the same. People appreciate being well informed, and when they understand what the test is for, they work harder to cooperate.

INFANTS AND CHILDREN: THE CHALLENGE

We have all seen pictures in articles concerning the infant ERG where a beautiful baby is quietly sucking on a bottle with the Burian-Allen contact lens electrodes positioned perfectly over the baby's corneas. This happens very rarely. It is more likely that the baby will be crying violently. And unless the examiner has taken the time to inform the parent of what to expect, hovering over the crying baby will be a parent staring accusingly at the examiner, often with a pool of tears standing in her eyes.

When working with an infant or child, the goal is to create a calm atmosphere where the examiner and parent are working together. Most of the time, it is best to allow only one parent to accompany the baby—the parent who is better at keeping the baby calm (usually, but not always the mother). The parent should be encouraged to reassure the baby by

talking or singing quietly while stroking the baby's head or arm. There have been many successful ERGs performed in our laboratory to the tune of "Mary Had a Little Lamb" or the "ABC" song.

While explaining the test to the parent, it helps to touch the baby, make eye contact, and smile frequently. This helps develop a rapport with the baby and, equally important, reassures the parent that the examiner will be gentle and thoughtful in his handling of the baby.

In our laboratory, we use a papoose board to wrap the baby to make him feel more secure. Also, wrapping ensures that little hands will not disturb the electrodes. The parent should be ready with bottle, pacifier, or favorite toy so that after the electrodes are secured the baby can be calmed as quickly as possible.

After 6 years of age, it is easier to work with children. Frequently, the child has been in school for several years and can follow instructions and sit for longer periods of time. Color vision testing, for example, can be made to seem like a game—a color puzzle. As long as the examiner is willing to spend the time needed to keep the child interested and performing accurately, reliable results can be obtained.

The ERG, however, requires special effort even with an older child. Allowing the older child to turn on the equipment and push some of the buttons usually gets his attention and interest. If the child is particularly fearful, the eyes can be tested separately, or if the condition is a bilateral symmetrical retinal disease, then testing one eye is a reasonable screening procedure. Many children tolerate the testing of one eye but will reject simultaneous testing of both eyes. I always explain what I am going to do, but instead of using more sophisticated terminology, I talk of how the equipment will pick up "secret messages" from the back of his eyes and how if he cooperates he will be able to take home a copy of those messages. The usual bribes of stickers and suckers also help induce a cooperative attitude. Techniques like these for the baby and child practically eliminate the need for general anesthesia. Given the risk, great expense, and time of anesthesia, the extra personal effort is certainly worth it.

Whatever the age of the patient may be, if the examiner treats him as an intelligent human being who has an interest in understanding about the testing procedures, the examiner will gain patient cooperation and thus more accurate results.