Going Back One Car in the Train: Evaluation of the Relative Afferent Pupillary Defect in the Era of Tele–Neuro-Ophthalmology

The recent pandemic has forced us from our usual practice of medicine to alternative means including telehealth visits for the safety of the patients and practitioners. These virtual office visits have left us with few of the tools that we normally rely on. Therefore, there is a greater reliance on clinical skills that can translate in the virtual visit and be helpful for diagnosis.

Here we bring to attention the evaluation of a relative afferent pupillary defect (RAPD), a sign of optic neuropathy, through an old-fashioned method. Galen's second century observation about pupillary reactivity was remarked on by Hirschberg in 1901 (1) that the uncovered eye's dilation was worth observing. Although alternate cover testing was not explicitly described by Gunn, he was doing it in bright light to describe his observation that completely covering the good eye would paradoxically dilate the bad eye. Alfred Kestenbaum measured this difference in pupil size (2), and it was termed *Kestenbaum's pupil number* (KPN) by Dr. H. Stanley Thompson in his beautifully written treatise in the Second Hoyt Lecture on the history of pupillary function (3). This method is still perfectly suited for today's available technology in the era of tele–neuro-ophthalmology that we outline below:

Evaluation of an RAPD in the tele–neuro-ophthalmology video examination as follows:

1. With bright diffuse daylight oriented at the patient's face ask the patient to orient a camera framed closely on both eyes while they fixate at a distant target.
2. Using a large kitchen spoon that can block light ask the patient to alternatively cover each eye.
3. Observe the revealed pupil. If it dilates rather than constricts, this is evidence of an RAPD.
4. Pupils in saved images can be compared and their difference in size documented as KPN, a quantitative measurement is validated against neutral density filters (4).
5. To visualize dark irides, patients' alternately illuminating each eye with a closely held bright light in a dark room is effective and familiar.

To quote H.S. Thompson, "When almost every 'discovery' turns out to be a rediscovery, our modern clinical contributions begin to seem like just another car at the end of a long and magnificent train of observations." We have the fortune to walk back one train car length and recall a forgotten but useful clinical skill for our patients today.

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