Assessment of Intraocular Pressure with iCare Rebound Tonometry in a Pediatric Ophthalmology Clinic

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Introduction

Intraocular pressure (IOP) is not routinely measured in the pediatric population, due to the challenge of administering topical anesthetic eyedrops to children, which is required for the methods of IOP measurement used routinely in the adult population. We examined the utility and feasibility of routine IOP testing with the iCare TAO1i rebound tonometer (IRT) in a pediatric population. With the advent of iCare, it is now possible to accurately measure IOP without an anesthetic, with minimal patient discomfort, and without the need for specialized skills for operation.

Methods

This study measured IOP in the pediatric ophthalmology clinic at the Ross Eye Institute with IRT. IRT was attempted routinely on all patients over several clinic days, excluding post-operative patients, retinopathy of prematurity screening examination patients, and patients over 18 years old. The IRT provides both an IOP reading, plus a measure of reliability associated with each reading. IRT was attempted and repeated until an acceptable amount of reliability was reached, for up to three attempts in each eye. Both IOP readings and reliabilities were recorded. In addition to the IOP measurement with reliability, several variables were recorded including length of time taken to measure, and patient comfort level.

Results

The success rate of obtaining a reliable IOP measurement was 57%, with reliability defined as IOP values associated with a P (no line), P- (line bottom), or P+ (line middle) if IOP>19mmHg.

Our population consisted of a total of 97 patients with a mean age of 8.5 years (range of 0.75-18). Mean time taken was 83 seconds (range of 30-324). Mean comfort level was 0.7/10 on the Wong-Baker scale.

The average of all reliable IOP measurements recorded with IRT was 16.3 mmHg, with a standard deviation of 3.7 and median of 16. Minimum and maximum values recorded were 8 and 29, respectively. 7/111 reliable IOP measurements (6%) were >21 mmHg.

Discussion

Our data indicate that IRT is a well-tolerated and relatively quick method to test IOP in children, and can be performed reliably in the majority of pediatric patients. However, the success rate of 57% and documented ocular hypertension in 6% of successful measurements with no suspicion of glaucoma, may not justify routine testing.

Conclusion

Routine IOP testing in a pediatric clinic using IRT is easy, quick, and comfortable to the patient, but success rates are less than optimal. IRT is a very useful device for recording IOP in children when other methods are not possible, but it may be best utilized on an as needed basis.

References