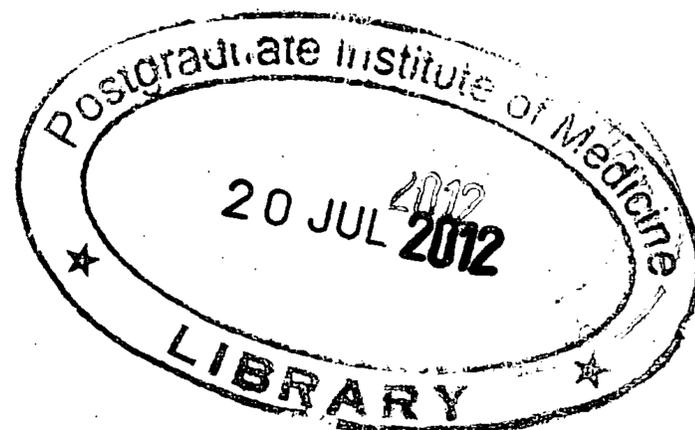


Abstract

Glaucoma Ganglion Cell Study



Introduction

Definition of glaucoma is a rapidly changing subject. Current definition is focused mainly on loss of ganglion cells³¹.

It has been proved by histopathological studies that the conventional Humphrey visual field tests detect glaucoma when there is more than 50% loss of ganglion cells^{6,22,25,30}.

There are various different test types available to diagnose and to follow up glaucoma patients. It is impractical for the patient and for the clinician to subject the patients to all the available tests.

So it is very important to identify the most appropriate test for each of the different types of glaucoma for diagnosis and to follow up. Further it is very useful to identify the best parameter of each test type that reflects the severity of damage due to glaucoma.

Purpose

1. To identify the most appropriate test to diagnose and follow up different types of glaucoma.
2. To identify the best parameter in each of the different test types that reflects the progression of the disease.

Methodology

63 eyes of patients attending Glaucoma clinic, Croydon eye unit, Mayday university hospital United Kingdom were selected.

All of the patients selected were between ages of 20 to 85 years with reasonably good vision to

get acceptable good performance in the test. Those patients in the study sample did not have any extensive Retinal or Neurological disease that can interfere with the test results.

All of the eyes are being assessed with the following tests. Time Intervals between two tests are minimised from less than 1 day to maximum of 3 months to maintain the stability.

1. **Humphrey visual field 30-2**
2. **Frequency doubling perimetry(FDT) 30-2 threshold**
3. **Optical coherence tomography optic nerve head nerve fibre layer RTVU(OCT RTVU) ONH NFL**
4. **Optical coherence tomography ganglion cell complex RTVU(OCT RTVU)GCC**

Each of the different parameters of test results were assessed and compared manually. Upper and lower halves of the fields are being analysed from point to point separately in the field tests and the values for the thicknesses of the nerve fibre layer and the ganglion cell layer were analysed separately.

I used the PASW software to analyse the statistical measures of variations of the test results and their correlation.

Results

All four test types showed very significant correlation in early to advanced Glaucoma. Correlation was poor between structural and functional tests in Glaucoma suspects. OCT GCC and OCT NFL showed good correlation in all the different types of Glaucoma. FDT showed better correlation with structural tests than HVF.

Conclusion

In diagnosed Glaucoma, any of the four test types can replace the other when it is impossible to do a particular test type for the patient (due to unavailability or lack of cooperation)

In Glaucoma suspects with normal HVF, FDT and OCT are very useful tests to follow up the patients.