

“A COMPARITIVE STUDY TO ANALYSE THE SIGNIFICANCE OF PRESSURE-TO-CORNEA INDEX IN PRIMARY OPEN ANGLE GLAUCOMA , NORMAL TENSION GLAUCOMA , OCULAR HYPERTENSIVE PATIENTS AND PATIENTS WITHOUT GLAUCOMA”

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KEYWORDS :

Central corneal thickness, Mean Intraocular pressure, True Intraocular pressure , Pressure -to -cornea Index , Primary Open Gluacoma , Normal Tension Glaucoma , Ocular Hypertension.

INTRODUCTION: Normal human central corneal thickness varies between a range of 490 μm to 560 μm . Whereas the intraocular pressure measured by the gold standard method ‘Goldmann Applanation Tonometry’ is based on the assumption that CCT is 520 μm . The measured intraocular pressure becomes falsely high or falsely low when measured on thicker corneas or thinner corneas respectively. So, IOP has to be adjusted according to the central corneal thickness by a correction factor. Whereas the relationship between IOP and CCT is not linear. So even if the correction factor is applied, the correction of IOP over the extreme values of CCT becomes inaccurate and not reliable. Also, none of the correction factors, so far proposed, has been universally accepted as a standard formula. So, to overcome this error in correction of IOP by various nonstandardized formulae, and also to integrate IOP and CCT as a single risk factor for glaucoma, a new index called as **Pressure-To-Cornea Index(PCI)** was introduced.

“PCI is the ratio between the highest recordable pretreatment IOP in mm Hg to the cubic power of Central Corneal Thickness(CCT) expressed in mm.”

$$\text{PCI} = \text{Pretreatment IOP (mm Hg)} \text{ CCT}^3 \text{ (mm)}.$$

METHODOLOGY: Non randomized, comparative , cross-sectional study

Subjects for the study were chosen from patients attending ophthalmology department as outpatient as well as inpatient to the wards of our Govt.Rajaji Hospital, Madurai.

This study is to be conducted among 160 eyes of 80 patients above 40 years of age (of which 20 patients are normal subjects with no evidence of glaucoma, 20 patients with POAG, 20 patients with NTG, 20 patients with OCULAR HTN attending our department as outpatient as well as inpatient in the wards of our Govt. Rajaji Hospital, Madurai were included in this study.

RESULTS AND DISCUSSION: There was no statistically significant differences based on age and sex distribution among the four groups. The mean CCT value was highest in OHT group (0.575 mm) and lowest in POAG group (0.509 mm) with 0.538 mm in NTG and normal groups and there was a highly significant statistical difference among the four groups. In our study , the highest mean value for TIOP was seen in OHT group which was similar to the previous studies. the POAG group had mean TIOP of 22.46mmHG. There was a statistically significant difference between MIOP and TIOP among all four groups. In this study, a new parameter , the pressure to cornea index was studied which is calculated based on TIOP and CCT. In our study,the highest mean PCI was for POAG group with the value of 181.63 and SD was 98.24. the mean PCI was 141.32 (SD of 63.48) for OHT group. The NTG group in our study had a mean PCI value of 113.13 (SD of 25.86) .On analyzing the mean PCI value among the four groups statistically, significant difference was observed.

CONCLUSION Integrating TIOP and CCT into single risk factor in the form of pressure to cornea index (PCI) for four groups is better parameter than the independent parameters (TIOP and CCT) which is highly variable. The relationship of PCI was significantly correlated among the four groups making it a more reliable parameter for various IOP levels. Hence PCI may be taken as a independent glaucoma risk factor , as it can reflect changes in various levels of IOP and CCT.

KEY WORDS: INTRA OCULAR PRESSURE, CENTRAL CORNEAL THICKNESS, PRESSURE CORNEAL INDEX-PCI, GLAUCOMA

KEYWORDS

M-MALE F-FEMALE

RE-RIGHT EYE

LE-LEFT EYE

BCVA- BEST CORRECTED VISUAL ACUITY

PXF - PSEUDOEXFOLIATION

U/L – UNILATERAL

B/L - BILATERAL

MLC-MINIMAL LENS CHANGES

IMC-IMMATURE CATARACT

NS- NUCLEAR SCLEROSIS

PCIOL – posterior chamber intraocular lens

IOP – INTRAOCULAR PRESSURE

AT- APPLANATION TONOMETRY

CCT- CENTRAL CORNEAL THICKNESS

PCI – PRESSURE-TO-CORNEA INDEX

MIOP –Mean intraocular pressure.

TIOP – True Intraocular Pressure.