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Astigmatism in candidates of Cataract surgery and its relationship with corneal optical power, axial length, sex and patient age

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Abstract:

This study was conducted to define the prevalence and types of corneal astigmatism in relation with corneal optical power, axial length, sex and patient age. 641 cataract patients were included in a descriptive study. Complete eye examinations were included in a descriptive study. Complete eye examinations were performed. The data were analysed by standard procedures including analysis of variance, chi square test and multiple linear regression models. With the rule, astigmatism was 55.6% in younger cases and against the rule astigmatism was 55.6% in younger cases and against the rule astigmatism was 43.7% in older cases ($P < 0.0001$). Against the rule astigmatism was 55.8% in older males and 34.6% in older females ($P < 0.0001$). There was 0.023d decrease in kpol for each year increase in age 1 ($P < 0.0001$). Axial length in males was 23.35 ± 1.79 mm ($P < 0.05$) for second degree model to show relationship between astigmatism and axial length R^2 was 0.019 and 0.03 by increasing axial length up to 26 mm corneal power decreased, but further increase in axial length led to corneal power increase. For each diopter increase in corneal power there was 0.1 diopter increase in net astigmatism ($P < 0.0001$). In corneal powers less than 45.5 diopter there was no difference between direction of astigmatism, but in corneal powers more than 45.5 diopter with the rule astigmatism was dominated ($P = 0.01$). younger cases had more with the rule astigmatism and older cases had more against the rule astigmatism. Against the rule astigmatism was more common in older males than in older females. With the rule astigmatism ratio shifted to ATR astigmatism ratio with age but there was no change in against the rule astigmatism ratio with age. Males had 0.22 mm axial length more than females. There was significant relationship between axial length and net astigmatism. Abnormal size eyes had more astigmatism. Emmetropization mechanism of cornea did not work for eyes longer than 26 mm. Myopia was related to total astigmatism. Second degree model was more fitted to show relationship between astigmatism and axial length.

Keywords:

[Preoperative astigmatism](#) , [Axial length](#) , [Corneal optical power](#)

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