

Predictability of Pupil Mydriasis as a Biomarker for Diabetes

Authors : Naveen Kumar Challa, Pavan Verikicherla, Madhubalan, Ashish Sharma

Abstract : Aim: Aim of the study was to find whether any difference exists in pupil mydriasis measured with Orbscan in non-diabetic and type 2 diabetic patients at various intervals after installation of Tropicamide 0.8% and Phenylephrine 5%. Methods: the Observational study conducted at a tertiary care eye hospital during September 2014 to March 2015. 240 eyes from 120 patients (40 non-diabetic, 80 diabetic) were dilated with Tropicamide 0.8% and Phenylephrine 5%. One drop of a drug was installed twice. The second drop is installed at 20 minutes after installation of the first drop. In two groups' pupil diameter was measured before installation of drops and also at 15, 30, 45 and 60 minutes after installation of the first drop using both Orbscan. Result: Mean age of the non-diabetic group is 48.67 ± 7.93 years; Diabetic group is 59.97 ± 8.77 years. Mean duration of Diabetes was 7.01 ± 5.05 years. Mean pupil diameter measured with Orbscan before installation of the drops and also at 15, 30, 45 and 60 minutes after installation of first drop in non-diabetic group was 4.18 ± 0.64 mm, 6.15 ± 0.41 mm, 7.76 ± 0.34 , 9.59 ± 0.30 , and 9.97 ± 0.10 mm respectively and for the diabetic group it was 4.00 ± 0.56 mm, 5.53 ± 0.52 mm, 7.018 ± 0.58 mm, 8.25 ± 0.51 mm and 9.18 ± 0.46 mm respectively. The mean difference between the mean pupil diameters of the non-diabetic and diabetic group shows a significant difference ($P < 0.01$) at all intervals except before dilatation. There is a significant negative correlation ($r = 0.78 - 0.92$) between the duration of diabetes and pupil dilatation at all intervals after installation of the drops. There is also significant difference ($P < 0.005$) in the mean values of pupil diameter between non retinopathy diabetic subjects and diabetic retinopathy subjects at all intervals after installation of drops. Conclusion: People attending eye clinic, whose pupil mydriasis values falls below the normal may be referred for diabetic evaluation. If normative data is established for the pupil size in Indian population using Orbscan then the values fall under normative data could be a predictor for diabetes. This would in turn help ophthalmologist to detect the diabetes at an early stage and prevent the complications resulting from the diabetes.

Keywords : diabetes mellitus, pupil diameter, orbscan, tropicamide

Conference Title : ICOO 2016 : International Conference on Ophthalmology and Optometry

Conference Location : London, United Kingdom

Conference Dates : February 25-26, 2016