The Effect of Tetracaine in Pupillary Dilatation for Diabetic Patient

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Objective: This study was conducted to answer the question that does tetracaine instillation prior to routine dilating drops improve a pupil dilatation in diabetic patient, compared to normal subjects.

Methods: A randomized, comparative interventional study. Sixty-three diabetic patients (126 eyes) and 73 non-diabetic patients (136 eyes) voluntarily took part in the investigation at Songklanagarind Hospital. Each patient, if the first eye was randomly assigned to protocol A, the other eye would then be assigned to protocol B. In protocol A, a single drop of 0.5% tetracaine was instilled before the administration of routine dilating drops. In protocol B, a drop of normal saline was instilled before the administration of dilating drops. Pupil diameter was recorded by infrared pupillometer (Colvard®) at baseline and after completing a set of instillations in each protocol at every 10 minutes until 60 minutes. Maximum vertical and horizontal pupil diameters, an incremental ratio of dilatation, and a time to achieve the desired pupillary diameter (at least 6 mm on both vertical and horizontal dimensions) were recorded.

Results: The mean baseline pupil diameter was not different between each eye in both diabetic and non-diabetic patients. A maximal pupil diameter, an incremental ratio of pupillary dilatation and a time to achieve the desired pupillary size were not significantly different between both protocols in either diabetic or non-diabetic group. The desired pupillary diameter size was achieved in 10 minutes (more than 50% of patients) and 20 minutes (more than 80% of patients).

Conclusion: The instillation of tetracaine eye drop prior to the routine pupillary dilating drops did not augment the dilatation effect in diabetic patients. However, the pupil diameters of 80% of the patients in both protocols had reached the optimal size suggesting for a fundoscopic exam, a posterior segment laser treatment or even for an ophthalmic surgery within 20 minutes.