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Service (sector)

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Comparison Between ocular coherence Tomography and Ultrasound in Diabetic Macular Edema.

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Purpose: To evaluate the sensitiveness of ocular coherence tomography (OCT) and B-scan ultrasound (US) in the detection of macular edema in diabetic patients.

Methods: Eyes with a clinical diagnosis of macular edema made by indirect binocular ophthalmoscopy during the Diabetic Eye Campaign were tested with the OCT (Humphrey) and US (Alcon – 10 Mhz probe) in a double-blind fashion. OCT scans were done using the cross section pattern (horizontal and vertical scans) under direct visualization of the affected eye fundus. The highest measurement was accepted for this study. Ultrasound was performed using a 10 MHz probe, with the logarithmic scale and gain between 58 to 65 MHz. The macular area was accessed using the horizontal axial, vertical axial and longitudinal temporal cuts.

Results: Seventy-two eyes of 69 patients were tested by OCT and US (36 OD and 36OS). Thirty-seven patients were female and 32 were male. The mean age was 59.6 years (range, 20.81 y-o). Forty-nine patients were Caucasians, 2 Japanese and 18 were black. The mean duration of the diabetes was 12.3 years (range 0.08 – 30 years). The mean macular thickness obtained by OCT was 472,8 um (range, 244 – 1360 um). The mean macular measurement obtained by US was 1.72 mm (range, 0.9 – 2.8 mm). Statistical analysis will be further provided. Three groups of US macular thickness were analyzed: Group 1 (0,9 to 1,2 mm); Group 2 (1,3 to 2,0mm) and Group 3 (2.1 to 2.8mm). The mean thickness obtained for each of those US groups was 421.7 um 476.6 um and 520.7 um, respectively to Group 1.2 and 3. Group 3 showed more consistency to the OCT measurements. In group 1 it was not possible to measure macular thickness with accuracy.

Conclusion: OCT was more sensitive in the detection of macular edema than the ultrasound. However, the detection of macular edema by an ultrasound exam should alert the surgeon alert to the visual acuity prognosis of that affected eye since OCT needs clear media to be performed, whereas US scans can be obtained through opaque media. Macular thickness of 2.1 mm or

higher measured by the US is reliable and the surgeon should be alert to this finding.