

R1 R2 R3 PG0 PG1 Estagiário Tecnólogo PIBIC

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Service (sector)

Ocular Ultrasound

Nº CEP

Image acquisition comparison between ultrasound transducers, 10 vs. 20 MHz in macular lesions evaluation.

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Purpose: To study the differences in image acquisition between 10 and 20 MHz ultrasound transducers in examination of macular lesions, and to compare tissue differentiation with (OCT) Ocular Coherence Tomography.

Methods: Fifteen cases (10 patients) with diagnosed macular lesions and clear media were included. Retinographies and OCT images were captured for documentation. Ultrasound examination was performed on each case, with 10 and 20 MHz transducers on horizontal axial position and macular longitudinal scans for either eye. Gain was adjusted to 60 +/- 5db for 10MHz and 75 +/-db for 20 Mhz. For 20 Mhz transducer, edge enhancement was turned to high. Images were captured dynamically and frozen on screen. Measurements was taken with zoom on perpendicular scans of the ocular wall tissue (choroid and retina), 3mm distant from the optic nerve.

Results: There were six cases of age related macular degeneration (bilateral in 3 patients), 5 cases of epiretinal membranes (3 of them with pseudo-macular holes), and 4 cases of macular edema, 1 post-retinal branch vein occlusion, 1 post- pars plana vitrectomy for epiretinal membrane, and 2 due to diabetes mellitus. Comparing 10 and 20MHz transducers, on axial scans, 8 cases showed total lesion measurement concordance, 3 showed 0,1~0,2mm difference between transducers, and discordance was evident in 4 cases. On longitudinal scans, 6 cases showed total lesion measurement concordance, 3 cases showed a 0,1~0,2mm difference, and in 6 other cases, discordance between transducers. Comparing the scan positions in 10MHz, measurement concordance occurred in 7 cases, 6 cases demonstrated 0,1mm variation, and 2 cases had a discordance greater than 0,4mm. For the 20Mhz transducer, total concordance was noted in 6 cases, a variation of 0,1~0,2mm in 5 cases, and 0,3~0,5mm variation in 4 cases.

Conclusion: There was a good concordance between transducers, and also between scan orientation on the evaluation of macular alterations. OCT measurements of retina elevation did not correlate with measurements with ultrasound, though all patients had macular alterations seen with both methods.