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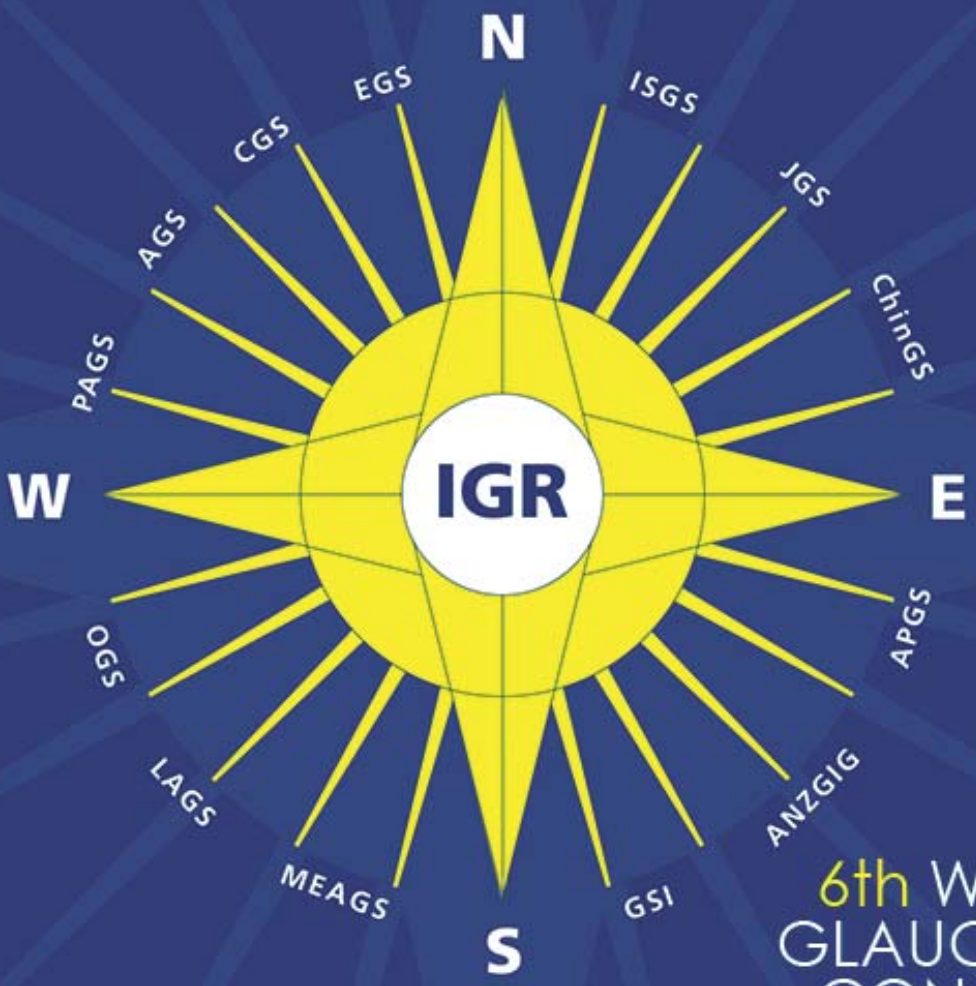

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OPTIC NERVE HEAD HEMOGLOBIN LEVELS IN CHILDHOOD GLAUCOMA PATIENTS

Carmen Mendez-Hernandez*[1], Lucia Perucho[2], Julian Garcia Feijoo[2], Manuel Gonzalez de la Rosa[3]
[1]Glaucoma, [2]Hospital Clinico San Carlos, Madrid, [3]Hospital Universitario de Canarias, Santa Cruz de Tenerife, Spain

Background: The computer program Laguna ONhE determines optic nerve head hemoglobin (ONH Hb) on retinal photographs based on detecting colour differences. The software provides two diagnostic indices for glaucoma: estimated vertical cup-disc-ratio (C/D) and glaucoma discriminant function GDF). This study examines the amount of ONH Hb in patients with chilhood glaucoma using this new noninvasive technique.

Methods: In this prospective, observational case series study, measurements were made on retinal photographs (Canon CR-Dgi non mydriatic fundus camera) using the Laguna ONhE program in 108 eyes of 63 healthy subjects and 88 eyes of 56 patients with childhood glaucoma. The variables recorded were: C/D, GDF, and ONH Hb across the whole disc, and across the vertical disc diameter (sectors 8 and 20). ONH Hb differences between groups were determined by independent t Student test. U Mann Whitney test was used in non parametric parameters. Pearson's correlation and lineal regression model were assessed in both childhood glaucoma and control study group.

Results: The median age in childhood glaucoma was 14 years old (P25-P75 10;25) and 9 years old (P25-P75 7;13) in healthy subjects (p 0.000).ONH Hb across vertical disc diameter was higher in controls (64.62 ± 7.52%) than in glaucomatous eyes (59.96 ± 13.07%), p0.002. C/D was higher in glaucomatous eyes (0.61 ± 0.17) than in control eyes (0.52 ± 0.98), p0.000. GDF was lower in glaucoma (-4 P25-P75 -30;20) than in the control group (6 P25-P75 -2;19), p0.001. There were not significant differences in ONH Hb across the whole disc between childhood glaucoma eyes (57.75± 11.24%) and healthy eyes (58.14 ± 7.16%) p 0.770. C/D on glaucoma patients was correlated with ONH Hb across the whole disc (- 0.745, p 0.000), ONH Hb across the vertical disc diameter (- 0.885, p 0.000) and GDF index (- 0.981, p 0.000). Multiple linear regression analysis revealed an effect of age (slope –0.153%/year (95%CI -0.61; -0.02, p = 0.023) on ONH Hb.

Conclusion(s): Our findings indicate the capacity of this device in childhood glaucoma diagnosis, however ONH Hb across the whole disc may have normal values. Our results will help to make future adjustments to the software of this new program.