Which glaucoma patients are safe drivers? Predictive value of UFOV, Esterman and integrated visual field

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Purpose: To assess whether a number of perimetric strategies and the UFOV test, alone or in combination, are able to predict the outcome of an on the road driving test (apt, unapt, or apt with restrictions) in glaucoma patients.

Methods: Sixty glaucoma patients with binocular field damage (6dB or more), holder of a driving licence and active drivers, were asked to fill in a questionnaire about their medical history, driving habits and motor vehicle collisions. Subsequently, they underwent a comprehensive ophthalmic examination, including a battery of perimetric tests: Goldmann, Octopus 30-2 with a binocular Integrated Visual Field (IVF) and Esterman. Finally, they performed the UFOV test, a Mini Mental Status and a standard practical on the road driving test under supervision of an expert of the Belgian Road Safety Institute.

Results: Patients were 66 years on average (range 37-84 years); 31% of the drivers were female. The Driver and Vehicle Licensing Agency (DVLA) criteria, the current standard of fitness to drive in the United Kingdom, were met by 70% of patients. Overall, 20% of drivers failed the driving test while another 49% were found to be apt with restrictions. The agreement between the DVLA assessment and the driving test was weak (Kappa statistic 0.29). The patient's age correlated strongly with the results of the UFOV test (Spearman r = 0.63) and the IVF test (Spearman r = 0.34) but not with the Esterman test results. ROC analysis revealed superior predictive values of the UFOV selective attention and Esterman test with area-under-the-curve (AUC) values of 0.84 and 0.70 respectively. The discriminative power of both tests proved independent from age and gender. The IVF score (AUC 0.76) seemed dependent on age and gender. Spearman correlation between IVF and Esterman was r = 0.65, p < 0.001. The cut-off for UFOV at 500 ms selective attention gave a sensitivity of 89% and a specificity of 75%.

Conclusions: The combination of the patient's age, the performance on the UFOV test and the IVF is a reliable predictor of his ability to successfully perform an on the road driving test (AUC = 0.93).