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Do additional testing locations improve the detection of macular perimetric defects in glaucoma? | IOVS

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ARVO Annual Meeting Abstract | June 2021

Do additional testing locations improve the detection of macular perimetric defects in glaucoma?

Investigative Ophthalmology & Visual Science June 2021, Vol.62, 3485. doi:

Abstract

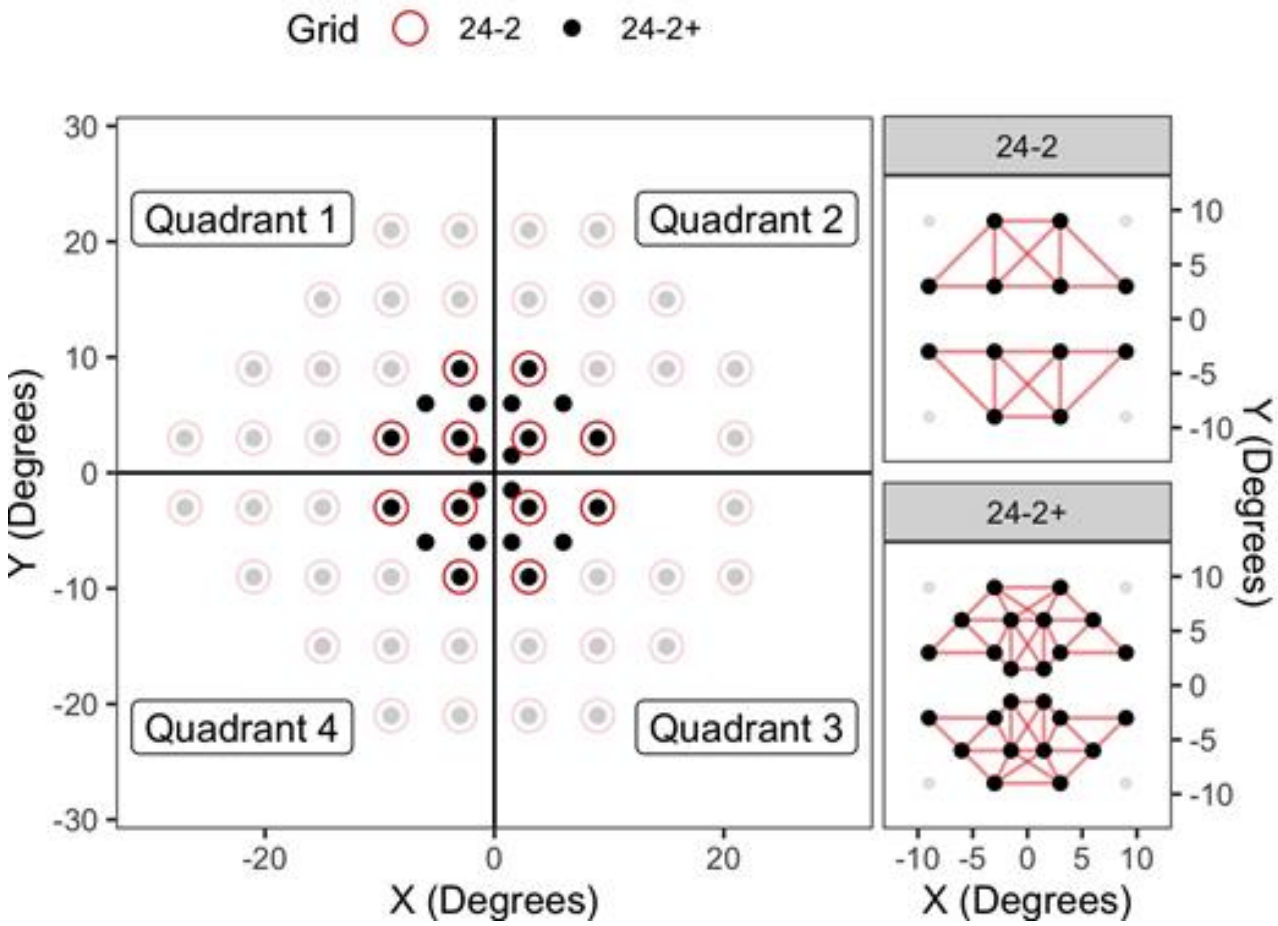
Purpose : To evaluate the ability of additional central testing locations to improve detection of macular visual field defects in glaucoma.

Methods : 440 healthy people and 499 patients with Glaucomatous Optic Neuropathy (GON) from seven different clinical settings were tested with a fundus tracked perimeter (CMP, CenterVue, Italy) using a 24-2 grid with 12 additional macular locations (24-2+, Figure 1). GON was identified based on expert evaluation of optic nerve head photographs and optical coherence tomography scans, independently of the visual field (VF). We identified macular defects using locations with measurements outside the 5% and 2% normative limits on Total Deviation (TD) and Pattern Deviation (PD) maps within the VF central 10 degrees. Detection was based on the total amount of affected macular locations (*overall detection*) or on the largest number of affected macular points connected in a contiguous cluster (*cluster detection*). Number of locations and the cluster size to identify significant defects were used to obtain equivalent specificity between the 24-2 and the 24-2+, calculated using false detections in the healthy cohort. P-values for detection improvement were calculated via bootstrap and considered significant at $p < 0.05$.

Results : At matched specificity, the *cluster detection* identified significantly more macular defects with the 24-2+ compared to the 24-2 with all considered maps ($p < 0.001$). The increase in percentage of detection was 8% and 10% for TD-5% and PD-5% maps, respectively, and 5% and 6% for the TD-2% and PD-2% maps. For the *overall detection*, an improvement was only observed for the TD-2% and PD-2% maps (9% increase, $p < 0.001$). There was good but not perfect agreement between the two grids (Venn diagrams in Figure 2). The percentage of detected macular defects ranged from 30% to 50%, depending on the map and detection method used.

Conclusions : Additional macular locations can improve detection of macular defects without loss of specificity.

This is a 2021 ARVO Annual Meeting abstract.



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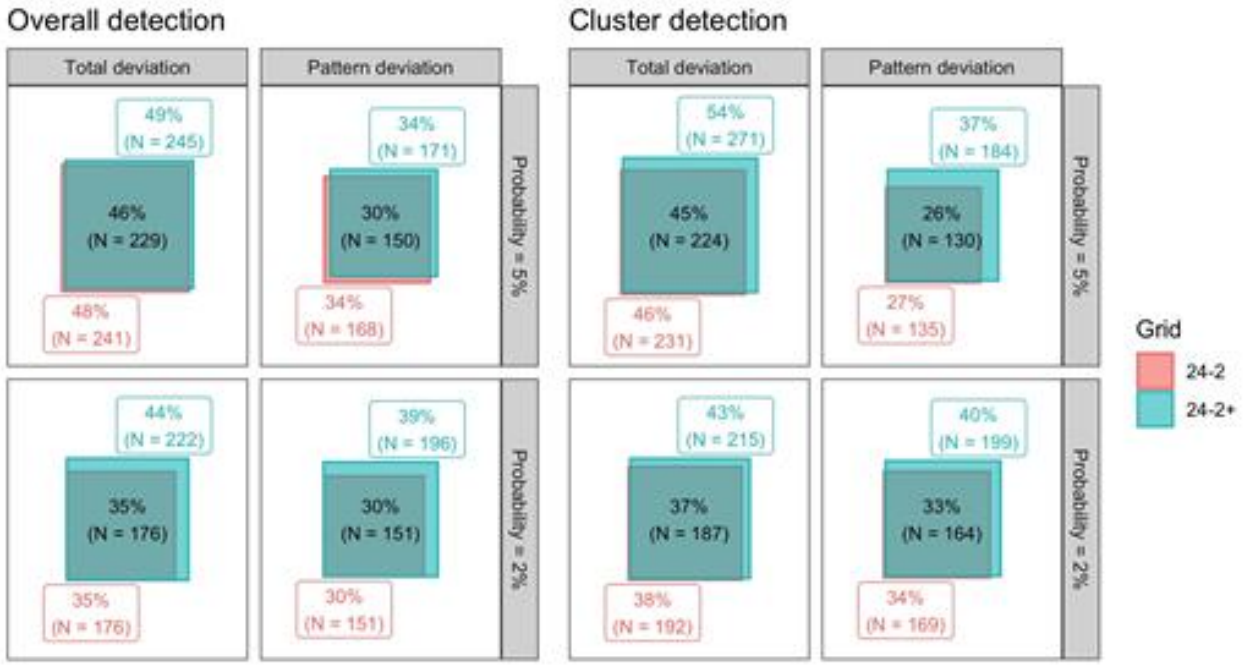
Locations within 10 degrees, used in this analysis, are highlighted. On the right, the neighbourhood relationships used to define the clusters of contiguous points.



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Venn diagrams of the agreement between 24-2 and 24-2+ for the detection of macular defects.

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