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View Abstract

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AUTHORS

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Commercial Relationships Disclosure (Abstract): Marisa Rodriguez-Carmona: Commercial Relationship: Code N (No Commercial Relationship) | Qais Bastaki: Commercial Relationship: Code N (No Commercial Relationship) | John Barbur: Commercial Relationship: Code N (No Commercial Relationship)

Study Group: IV

ABSTRACT

TITLE: Loss of color and flicker sensitivity in subjects at risk of developing diabetes

ABSTRACT BODY:

Purpose: Recent studies carried out in diabetic patients with no more than moderate maculopathy revealed that over 70% of these diabetic patients had a significant loss of both Yellow/Blue (YB) and Red/Green (RG) color vision (https://doi.org/10.1111/j.1755-3768.2012.F073.x). The purpose of this study was to investigate whether clinically normal subjects, identified as being at 'risk' of developing diabetes show significant loss of color vision and/or abnormal thresholds for rod and cone mediated flicker.

Methods: Three groups of subjects were recruited from a healthcare centre that offers diagnostic and screening services, including vision assessment; G1 (normal subject group (n=11) with no risk factors and no history of eye disease), G2 ('high-risk' subject group (n=62)) and G3 (subjects diagnosed with diabetes (n=23)). The inclusion criteria for G2 required three or more recognised risk factors for diabetes (e.g., age >45, HbA1C >5.7, high blood pressure, smoking history, high BMI, family history of diabetes, FPG levels >100 mg/dl). In addition to ophthalmic assessment, VA and Functional Contrast Sensitivity (FCS), thresholds for rod and cone mediated vision and RG and YB vision were measured in each subject using the advanced vision and optometric tests (www.avot/city.ac.uk).

Results: All G1 subjects recruited from the healthcare centre had VA better than 6/9 and FCS values within the normal range, as well as rod and cone mediated flicker thresholds and RG and YB color thresholds below the upper limits for their corresponding age. G2 (high risk) subjects had RG and YB thresholds significantly higher than the normal group (P(T≤ t): RG (0.007); YB (0.002). Rod and cone mediated thresholds were also higher: Rod (0.0001), Cone (0.0014). G3 subjects had the highest thresholds revealing significant loss of color and rod and cone mediated flicker sensitivity.

Conclusions: Consistent with previous findings, the diabetic group (G3) show significant loss of both RG and YB vision. They also have higher thresholds for rod and cone mediated vision. Surprisingly, the high-risk subject group who do not meet the clinical criteria for early diabetes also show significant loss of color and rod and cone sensitivity. These findings suggest that accurate assessment of color vision and rod and cone mediated thresholds qualify as important risk factors in prediabetic screening.

(No Image Selected)

Layman Abstract (optional): Provide a 50-200 word description of your work that non-scientists can understand. Describe the big picture and the implications of your findings, not the study itself and the associated details.: Color vision has been shown to be affected in patients diagnosed with diabetes. This study examines whether color vision and rod and cone mediated flicker sensitivity are also affected in subjects that cannot be clinically diagnosed with diabetes, but are at high risk of developing the disease. Participants had at least three or more of the common risk factors associated with diabetes. The results show that although subjects do not meet the clinical diagnosis of diabetes, subjects with high risk of developing the disease exhibit significant worsening of red-green and yellow-blue color vision as well as rod and cone mediated flicker sensitivity.

DETAILS

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Other Registry Site (Abstract): (none)

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Date Trial Began (MM/DD/YYYY) (Abstract): (none)

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Support Detail (Abstract): None

TRAVEL GRANTS and AWARDS APPLICATIONS

AWARDS:

AFFIRMATIONS

Affirmations: Affirmation of compliance with ARVO policy on registering clinical trials.

Affirmations: Affirmation to present same work as abstract submission.

Affirmations: Affirmation to pay Annual Meeting's full registration fee.

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Affirmations: Affirmation to reveal essential structure, novel compound elements, or identify new gene compounds.

Affirmations: Affirmation that abstract data/conclusions have not been published; not redundant with other submissions from same investigators.