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SHORT COMMUNICATION

Microperimetric evaluation of macula in retinopathy of membranoproliferative glomerulonephritis type II: A case report

R. SHENOY[1], S. McCILLVENNY[2]

[1]Department of Ophthalmology and Program for Ophthalmic Technicians, Sultan Qaboos University Hospital, Muscat
[2]Department of Family and Community Medicine, Sultan Qaboos University Hospital, Muscat - Oman

PURPOSE. *To report on the microperimetric evaluation of the central visual field in a patient with retinopathy due to membranoproliferative glomerulonephritis.*
METHODS. *The central 20° visual field was evaluated using fundus-related perimetry with (Nidek MP1) microperimeter in a patient with proven membranoproliferative glomerulonephritis type II, who had multiple drusen-like lesions involving the posterior pole of both eyes, with corresponding window defects on fundus fluorescein angiogram.*
RESULTS. *Static threshold perimetry of the central 20° using a 10 dB threshold, Goldmann size II stimulus, with (Nidek-MP1) microperimeter showed reduction in retinal sensitivity in the parafoveal and in the temporal paramacular areas in both the eyes that had drusen-like lesions.*
CONCLUSIONS. *Early loss of function in retinopathy of membranoproliferative glomerulonephritis type II can probably be detected by fundus-related microperimetry. (Eur J Ophthalmol 2006; 16: 634-6)*

KEY WORDS. *Membranoproliferative glomerulonephritis, Drusen, Microperimetry*

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INTRODUCTION

Retinal function in membranoproliferative glomerulonephritis retinopathy has been studied only to a limited degree (1-5). Bilateral symmetric drusen-like deposits involving the posterior pole of the eye have been reported to occur, with visual impairment occurring only in advanced stages due to geographic atrophy, central vein occlusion, central serous retinopathy, and/or choroidal neovascularization (1-5).

Microperimetry using the Nidek MPI microperimeter, with its steady eye-tracking system, allows fundus-related perimetry. It helps to assess the fixation pattern and retinal sensitivity thereby allowing better understanding of the severity of the disease process (6).

We report on a clinically asymptomatic patient with membranoproliferative glomerulonephritis type II, who had bilateral symmetric paramacular drusen-like lesions with areas of reduced retinal sensitivity detected on fundus-related perimetry.

Case report

A 30-year-old woman with membranoproliferative glomerulonephritis type II of 5 years duration was referred for ophthalmic checkup by the nephrology department. She had no specific ocular complaints. On examination, the best-corrected visual acuity was 6/6 in both the eyes (+1.50/-0.1.00/90°). Intraocular pressure and slit lamp examination of the external eye were normal. Color vision (Ishihara pseudoisochromatic charts) and evaluation of the central 10° of the macula using the Amsler chart were normal in both eyes.

Fundus evaluation showed clear ocular media with bilateral symmetric multiple drusen-like lesions involving the posterior pole (Fig. 1, A and B). Blood vessels and fovea

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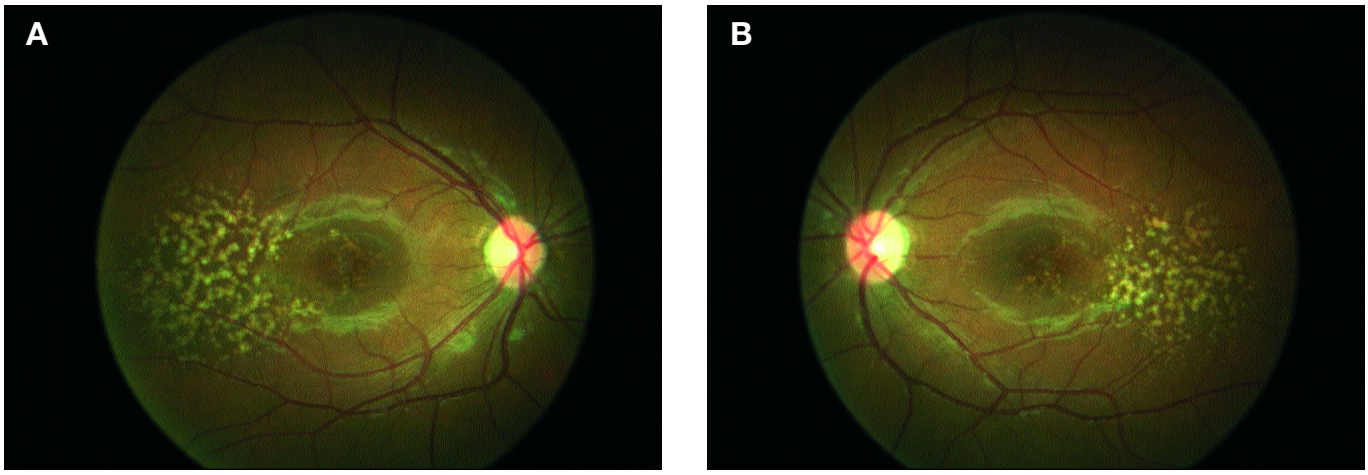

Fig. 1 - *Bilateral symmetric paramacular drusen.*

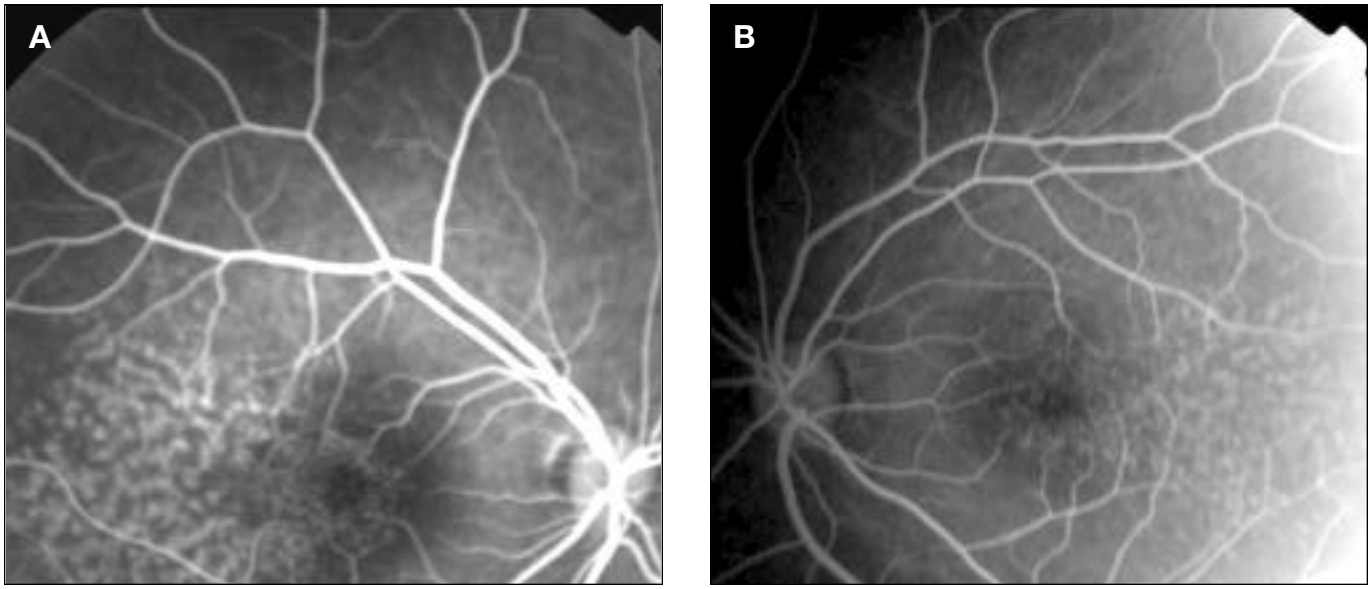

Fig. 2 - *Fundus fluorescein angiography showing bilateral symmetric window defects corresponding to paramacular drusen.*

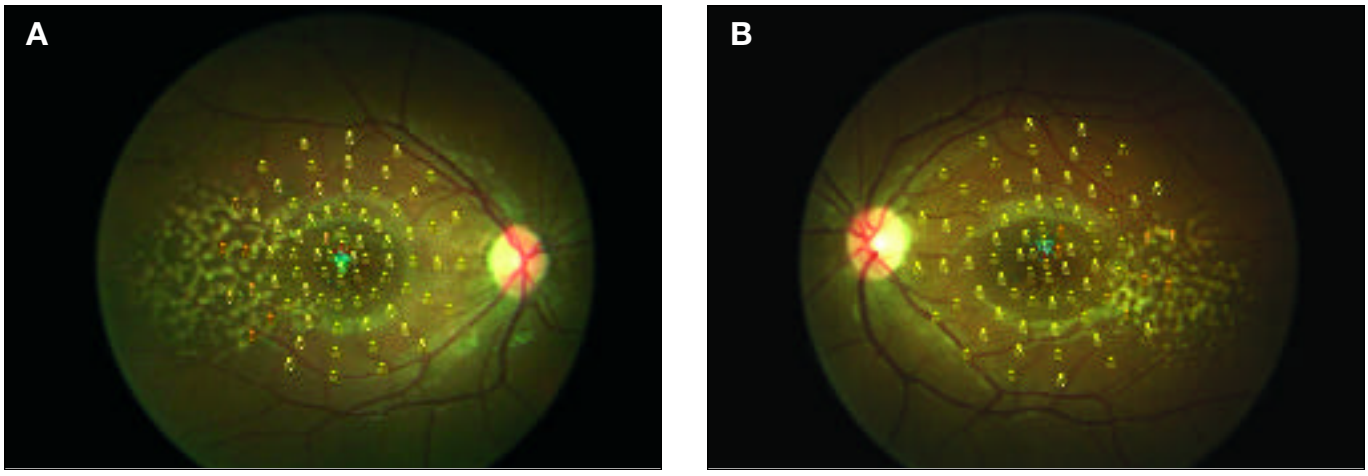

Fig. 3 - *Microperimetry of central 20° of macular area showing patches of reduced sensitivity in the parafoveal and paramacular area (6 dB and 8 dB).*

appeared normal. Fundus fluorescein angiogram revealed multiple window defects involving the posterior pole of both the eyes corresponding to the drusen-like lesions (Fig. 2, A and B).

Optical coherence tomography involving the macular area showed multiple undulations involving the retinal pigment epithelial–choriocapillary layer suggestive of drusen. Retinal thickness at the macular area was normal (250 µm). The central 20° of macular area evaluated by projecting a 10 dB threshold Goldmann size II stimulus in 76 locations, using 4-2-1 threshold strategy and a single cross as fixation object, showed stable fixation. Retinal sensitivity was subnormal (6 dB and 8 dB) immediately surrounding the fixation (within 2°) and in the temporal paramacular region laden with drusen-like lesions in both eyes (Fig. 3, A and B). Electroretinography and pattern visually evoked potential were normal. Dark adaptation test could not performed. Automated static threshold perimetry (Humphrey) was not conclusive.

DISCUSSION

Posterior segment changes in membranoproliferative glomerulonephritis type II were first reported by Duvall Young et al in 1989 (1). The clinical picture varied from deposits resembling drusen, atrophy and focal hyperplasia of retinal pigment epithelium, geographic atrophy, and choroidal neovascularization (I-5). The fundus changes progressed slowly with the systemic disease (I-5).

Kim et al reported clinical and angiographic posterior segment changes in 92% of patients with type II disease. All patients with fundus changes had renal disease of 16 months or longer (2). Subretinal neovascularization was reported by Leys et al in three patients with type II disease of 12 to 22 years duration (3).Our patient had drusen-like deposits involving the posterior pole and the paramacular areas of both eyes with a duration of the systemic disease of 5 years.

Measurable psychophysical and electrophysiologic abnormalities were reported in two of the three patients with membranoproliferative glomerulonephritis type II by Kim et al (4). These patients were clinically symptomatic. Automated static threshold perimetry disclosed mild nonspecific focal depressions in each eye of the patients, but could be correlated with visible focal retinal pathology in just one patient. The authors presumed the functional defect in the other patient to be probably due to impaired diffusion of metabolites in the retina across the drusen-laden Bruch membrane (4, 5).

Our patient was clinically asymptomatic. Amsler chart, color vision, and electrophysiologic tests were normal. However, areas of reduced retinal sensitivity were noted in the parafoveal and in some parts of temporal paramacular regions in both eyes, which were laden with drusen- like deposits, on fundus-related perimetry, probably indicating areas of reduced retinal function (4-6).

In conclusion, visual symptoms in reported patients with retinopathy of membranoproliferative glomerulonephritis type II resulted from structural changes in the retina and choroid rather than deposition of drusen-like material alone (1-5). Fundus-related perimetry aids in the early detection of areas of reduced retinal sensitivity or function, thereby delineating areas of potential structural damage (4-6).

No authors have any proprietary interest.

Reprint requests to:
Radha Shenoy, MS (Ophth), DOMS
Department of Ophthalmology
Sultan Qaboos University Hospital
P.O. Box, 38, P.C.123
Al Khoud, Sultanate of Oman
shenoyvs@omantel.net.om

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