Malattia Leventinese (ML), also known as Doyne’s honeycomb retinal dystrophy (DHRD) or dominant radial drusen (Mendelian Inheritance in Man [MIM] no. 126600), is a rare autosomal dominant retinal dystrophy characterized by the appearance in early adult life of small radial macular and parapapillary drusen with later confluent soft drusen in the macular area. A single missense mutation (arg345trp) in the EFEMP1 (EGF-containing fibrillin-like extracellular matrix protein) gene was identified in families with ML. Retinal atrophy and choroidal neovascularization with subsequent visual loss can occur during the fourth and fifth decades of life.

We have characterized clinically and genetically six members of a three-generation family affected by ML. They were prospectively analyzed by optical coherence tomography (OCT/SLO; OTI, Toronto, Ontario, Canada).

INTRODUCTION

METHOD & MATERIAL

Six family members in three generations were examined. Four patients diagnosed with ML were included in this study. The diagnosis was confirmed with the presence of R345W mutation and fundus findings consistent with ML. Best −corrected visual acuity, slit lamp examination, fundus color photography and OCT were performed.

RESULTS

Hyper-reflective drusen were identified between retinal pigment epithelium (RPEs) and Bruch membranes (BMs) with nodular or dome-shaped elevations, which coalesce to form a solid plaque layer. RPE and BM were assumed to be dissociated, changing the hyper-reflective space where drusen should be located into hypo-reflective fluid. RPE hyperplasia and pigmentary changes were followed. Confluent drusen were presumed to obscure and destroy the adjacent outer retina. The choroid layer was getting thiner, followed by retinal thinning. Choroidal neovascularization (CNV) was not identified.

DISCUSSION

1. Layer thickness

Confluent drusen can disrupt the outer retina layer (outer segment layer, inner segment layer, outer nuclear layer), although the thickness from Bruch’s membrane to internal limiting membrane is not affected initially. Choroidal atrophy (thinning) is followed by sensory retinal thinning.

2. RPE changes

Small and discrete drusen become confluent and form the honeycomb appearance. The RPE and the BM seem to be dissociated ,with an accumulation of a hypo-reflective fluid between the two layers (1st fig.: red arrow & 2nd fig.: double high reflectivity). RPE hyperplasia and pigmentary changes (3rd fig.: high reflectivity) show posterior shadowing (4th fig.: blue arrow). The weak posterior shadowing induced by early RPE hyperplasia is often confused as the RPE/BM dissociation.

3. Choroidal atrophy and ischemic optic atrophy

Confluent drusen may destroy the photoreceptor layer. Subsequent choroidal atrophy can expand to peripapillary area inducing ischemic optic atrophy. Choroidal atrophy is assumed to be the main cause of visual loss in ML/DHRD, rather than CNV.

CONCLUSION

This is the first report of describing a Korean family with variable expressivity of ML/DHRD. SD-OCT and fluorescein angiography may be helpful in determining the long term outcome of macular and visual function.

REFERENCES