Peripheral Lacquer Cracks as an Early Finding in Pathological Myopia

Lacquer cracks are uncommon findings in the posterior pole of highly myopic eyes. Herein, we report a case of a young man with an unusual localization of the lesion in the midperiphery of the eye.

Report of a Case. An 18-year-old man had a history of progressive myopia since childhood. No history of ocular trauma was obtained. The best-corrected visual acuity was 20/20 OU. The refractive error was −6.50 diopter (D) sphere OD and −2.75 D sphere OS (spherical equivalent). Binocular indirect ophthalmoscopic examination revealed myopic configuration of the optic nerve head and marked peripheral chorioretinal atrophy. In the temporal midperiphery, at approximately 2 disc diameters posterior to the vortex veins, 2 fine, arc-shaped lacquer cracks, about 1 disc diameter apart in the midportion and merging at the extremities, were present in the right eye, extending from the 9-o’clock to 1-o’clock positions (Figure).

Fluorescein angiography demonstrated early pseudofluorescence with no intraretinal or subretinal leakage of dye and faint hyperfluorescence in the late phase. Indocyanine green angiography showed 2 linear hyperfluorescences above the superotemporal vascular arcade (Figure insert). Central visual field examination showed no contraction.

Axial A-scan length measurements were 29.50 mm OD and 27 mm OS. A 25-mm transverse diameter of both globes at the anatomical equator was measured from the temporal to the nasal side, indicating a moderate equatorial scleral enlargement (normal value, 23.50 mm).

Comment. Lacquer cracks are uncommon findings in the posterior pole of highly myopic eyes with a prevalence ranging from 4.3% to 9.2%. They appear to be caused by stretching of the coats of the eyeball with increasing axial myopia. Although no direct statistical correlation is demonstrated with increasing axial lengths, the highest incidence was found for values of 31.5 to 32.4 mm. This lesion is most probably associated with a preceding subretinal hemorrhage and is often found within a posterior staphyloma. It involves young adults, the youngest patient to exhibit this change in 1437 eyes examined by Curtin et al being a 19-year-old man. The eyes of men have a 2-fold incidence of lacquer cracks as compared with those of women. Microscopically, a healed rupture in the retinal pigment epithelium–Bruch membrane–choriocapillaris complex has been observed.

Lacquer cracks have only been observed in the posterior pole of highly myopic eyes. In the present case, they were present in the midperiphery of the eye, a location that has never been described for these lesions to our knowledge. A possible explanation for the absence of peripheral lacquer crack descriptions could be related to their early occurrence in the disease course or to their rarity. Additionally, the reduced pigmentation of the equatorial zone of the eye as compared with the posterior pole could make lacquer cracks more difficult to identify, particularly in myopic patients with pale fundi.

A mild enlargement of the equatorial zone and a relatively well-
preserved posterior pole were detected in both eyes of our patient as if the axial growth and subsequent staphylomatous bowing mainly affected the mideye. This would also explain the absence of significant chorioretinal atrophy in the fundus area.

Measurements of the ocular transverse diameters by ultrasound biometry were 25 mm bilaterally in agreement with the mean value of 25.5 mm obtained on enucleated eyes harboring lacquer cracks. In consideration of the young age of our patient (18 years) and his relatively low refractive error in the affected eye (−6.50 D sphere), lacquer cracks could represent an initial finding before becoming incorporated into a larger area of myopic chorioretinal atrophy that develops with age. Indeed, transition to other myopic fundus changes have been demonstrated in 56.1% of 66 eyes, these being mainly represented by patchy or diffuse chorioretinal atrophy. Patients showing progression to patchy atrophy were younger and had longer axial lengths than those who demonstrated diffuse atrophy eyes. In the present case, the lesion appeared to be stable 1 year following initial examination.

Lacquer cracks must be differentiated from 2 similar diseases of Bruch membrane, namely angioid streaks and choroidal ruptures. Angioid streaks usually emanate from the disc, tend to be straighter, and are reddish in color. Choroidal ruptures, on the other hand, share with lacquer cracks similar distribution, color, and fluorescein angiographic appearance but are caused by a noticeable traumatic event. Traumatic choroidal ruptures may form arc-shaped patterns at various distances out from the optic nerve with the optic head at the center of the curves. However, they appear to be somewhat thicker and do not criss-cross.

In doubtful cases, fluorescein angiography can help in clarifying the clinical diagnosis and should include views of the midperiphery. Instrumental and clinical findings in our patient were in agreement with lacquer cracks. Recent cases of lacquer crack development following photodynamic therapy or laser treatment of choroidal neovascularization have been reported. A causal relationship between laser photocoagulation and lesion formation was suggested. Vigorous eye rubbing has also been advocated as a possible predisposing factor to lacquer crack formation. Therefore, a complementary role for traumatic events should be taken into consideration in the pathogenesis of lacquer cracks, and these may have precipitated an impending Bruch membrane rupture in our patient.

**Retinopathy and Choroidopathy as the Initial Signs of Hypertensive Brainstem Encephalopathy**

In hypertensive encephalopathy, brain magnetic resonance imaging characteristically shows a posterior leukoencephalopathy that predominantly affects the white matter of the parieto-occipital regions. Brainstem hypertensive encephalopathy predominantly affects the brainstem and cerebellum while sparing the parieto-occipital region and has not been documented in the ophthalmologic literature.

**Report of a Case.** A 46-year-old white woman described intermittent nausea, daily headaches, and a central scotoma in the right eye for approximately 1 week following blunt trauma to the face. Visual acuity was 20/200 OD and 20/40 OS. Pupils were brisk without an afferent pupillary defect. The anterior segments and intraocular pressures were normal. Funduscopically the right eye revealed marked optic disc edema and diffuse intraretinal exudate involving the fovea (Figure 1). The retinal vessels were tortuous with marked arteriolar constriction. Numerous areas of linear pigment epithelial hypertrophy with surrounding hypopigmentation were seen throughout the periphery of both fundi. The left optic disc was swollen to a lesser degree. Goldman perimetry revealed a large cecocentral scotoma in the right eye and an enlarged blind spot in the left eye. Blood pressure was 250/145 mm Hg. She was referred to the emergency department.

The patient was admitted to the neurological intensive care unit where her blood pressure was controlled using intravenous nicardipine along with metoprolol, amiodipine, and hydrochlorothiazide. Neurologic examination findings remained unchanged, and testing for causes of secondary hypertension was unrevealing. Magnetic resonance imaging revealed abnormal signal and symmetric enlargement of the pons and, to a lesser degree, the medulla and midbrain, extending into the middle cerebellar peduncles and the adjacent deep cerebellum (Figure 2A). The cerebellar tonsils were displaced downward through the foramen magnum. Early hydrocephalus was suggested by dilation of the lateral and third ventricles.

Repeat brain magnetic resonance imaging 8 days later showed marked improvement in the appearance of the entire brainstem with much less crowding of the foramen magnum (Figure 2B). On the day of hospital discharge, she was receiving oral valsartan, metoprolol, amiodipine, hydrochlorothiazide, and potassium and had a blood pressure of 133/69 mm Hg. Fourteen days after her initial examination,