



Information Sheet 3

Maculopathy in High Myopia

Myopia is a common eye problem in which the eyeball is too long so that light rays focus in front of instead of on the retina (Figures 1 & 2). Eye that has refractive error equal or greater than -6.0 Diopters (600 degrees) is classified as “high myopia”. Our recent study on secondary school students reveals a myopia figure of 64%, of which 9% are high myopia. In other word, about 6% of all secondary students are suffering from high myopia. The estimated figure for the general population of Hong Kong is 4% while that of the US is only 2%.

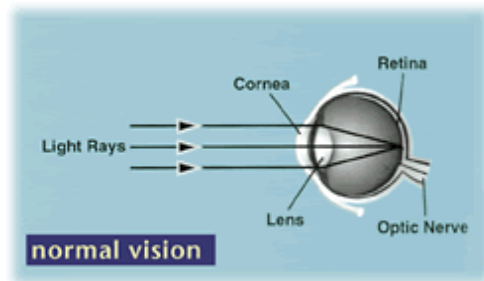


Fig 1

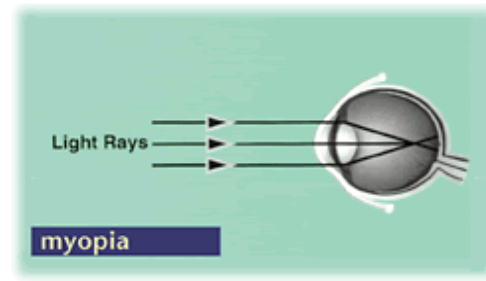


Fig 2

The greater the degree of myopia, the higher the chances of developing complications that can threaten vision. High myopia is the seventh leading cause of blindness in the US and its effects occur at an earlier average age than other causes of blindness such as diabetic retinopathy and age-related macular degeneration (AMD).

High myopic eyes, where the basic abnormality is excessive axial elongation, are associated with more chances of having degenerative changes in the sclera, choroid, retinal pigment epithelium and retina. There is also an increased risk of choroidal neovascularization (CNV), which is estimated to be in the range of 5% to 10% of eyes with high myopia. The axial elongation has a familial tendency and is present commonly with refractive errors greater than $-6.0D$. The stretching of ocular tissues in myopia affects the hemodynamics of the choroids. Diffuse choroidal thinning is resulted and CNV is more likely to develop. CNV is composed of newly formed vessels beneath the retina and they are leaky and can easily bleed. Bleeding or leaking of fluid from these abnormal vessels will cause visual symptoms and eventually visual loss of different degrees.

Common symptoms include reduced visual acuity, blurred vision, visual distortion (metamorphosia, macropsia and micropsia), discrete scotoma, and reading difficulty. Patients with unilateral involvement may not be aware of the problem until the good eye is being covered. Fluorescein angiography is a technique used to study the chorioretinal circulation and the pathology that affects the retina and choroids. The natural history outcome for CNV is not favorable. A previous study has shown that visual acuity of 20/200 or less was found in 73% of the eyes one year after the diagnosis of CNV. Conventional laser photocoagulation may not be useful treatment for centrally located CNV because the vision loss from subfoveal photocoagulation is likely to outweigh any treatment benefit. Photodynamic therapy (PDT) is now more commonly



Information Sheet 3

used. This treatment may stabilize vision in patients with subfoveal CNV by sealing off the abnormal vessels. Recently, anti-angiogenesis therapy has also been studied in myopic eye with CNV, the preliminary results are encouraging in which visual improvement can be seen in many patients, and longer-term follow-up and evaluation are warranted.

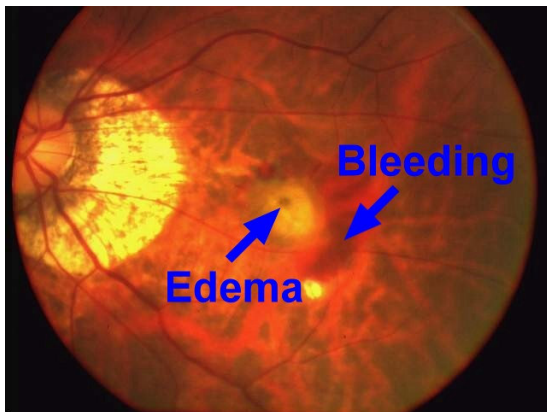


Fig 3: Fundus photo showing bleeding and edema over the macular region of a highly myopic eye

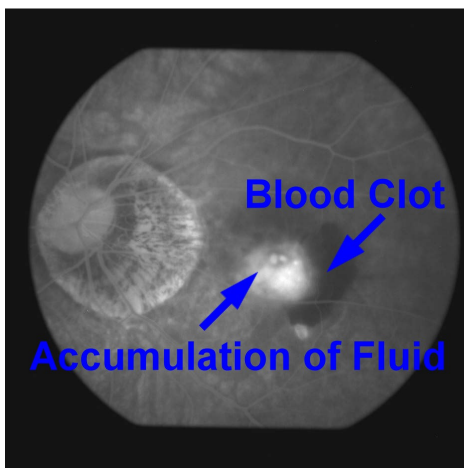


Fig 4: Fluorescein angiography showing subretinal blood clot and accumulation of fluid over the macular region