

ACCOMMODATION AND MYOPIA

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Myopia is a refractive error of the eye in which the image of a distant object focuses in front of the retina when accommodation is relaxed. The pathogenesis of myopia is very complicated and includes genetic and environmental factors. The refractive status of the eye may be decided on a genetic basis, but visual experiences may also affect the growth of the eye and influence the final refractive status. Many epidemiological studies have shown correlation between near work and myopia. However, the main cause of myopic progression is an increase in axial length and vitreous length of the globe. Therefore, there must be a correlation between near accommodation and axial elongation. Accommodation is the process of focusing on the image of a near object on the retina in which increased lenticular power and lengthening of the eyeball were noted in many studies. A persistent axial elongation in prolonged near viewing may cause structural fatigue of the sclera, which may be one of the factors causing the myopia.

Key words: accommodation, myopia, scleral creep, axial elongation

INTRODUCTION

Myopia is a spherical error of refraction. It is essentially too much refractive power or too long an eye for the image of a distant object to be focused exactly on the retina. Instead, the focus is in front of the retina, and the farther in front, the greater the myopia. Historically, myopia was recognized many centuries ago. It can be traced back to 1611 when Kepler first defined this condition. He believed the retina moved closer to the lens during accommodation and the cause of myopia

was a disturbance of this function. However, in 1632, Plempius examined the myopic eye anatomically and noted the distance was increased between the lens and the retina. Further, Von Arlt confirmed the findings of Plempius in the dissection of many myopic eyes in 1854. The studies of Sorsby in England showed the increased axial length of the eye ball would be compensated by a proportional reduction in the refractive power of the cornea and the lens which kept most eyes in an emmetropic state. Failure of this compensatory mechanism resulted in myopia.⁽¹⁾

Received: December, 2, 2011. Revised: December, 22, 2011. Accepted: January, 2, 2012.

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