

Ультразвуковая морфология хрусталика глаза у молодых людей

Мирошниченко А.А., Чирва А.В.

Харьковский национальный медицинский университет

Кафедра анатомии человека

Харьков, Украина

Ultrasound morphology of the human lens at young people

Miroshnichenko A.A., Chirva A.V.

Kharkov National Medical University

Department of Human Anatomy

Kharkov, Ukraine

The crystalline lens is a biconvex lens, consisting of fibers, forming layers. The front surface is more flat, the radius of curvature is approximately 10 mm, the rear is more convex, the radius of curvature is equal to 6 mm, the Diameter of the lens of a young person averages 9-10 mm, a thickness of 3.5 -3,6 mm (in. A. I. Gorban, O. A., Jaliashvili 1993, I. I. Kagan, C. N. Buzzards 1999, I. Sakabe, S J. Lim, DJ. Apple 1995). The substance of the lens to be 25-30 years old has a soft texture. By this age, the core, which is denser than the surface layers, is forming in its thickness. The core and surface layers have different ultrastructure (S. Nishida 1990). The lens capsule consists of collagenopathies material (in. G. E. Marshal, A. G. Konstas, N. E. Bechrakis, W. R. Lee 1992) and has a different thickness in different departments (in. A. I. Gorban, O. A., Jaliashvili 1993, R. F. Fisher, B. E. Pettet 1972). The external layers of the capsule anterior surface of the lens thicker are called zonal plate place of weaving in the capsular bag ligament of Zinn (in. A. I. Gorban, O. A., Jaliashvili 1993, I. I. Kagan, C. N. Buzzards 1999, SI. Karlova 2001). Different thickness of the lens capsule, according to some researchers, plays an important role in the process of accommodation (R. F. Fisher 1969, R. F. Fisher, Barbara E. 1972, R. A. Schachar, D. P. Cudmore, T. D. Black 1993, A. M. Samsonova in. A. Volkov 1999). After being removed from the eye or traumatic separation from sonali, i.e. without influence from the musculo-ligamentous apparatus, the lens under the action of internal forces tends to take a spherical shape (A. Glasser, M. C. Campbell 1999). The investigations of form and size changes of a lens at rest and during accommodation available under direct visual control. The result of many experiments, both in physiological conditions and medical models, it was shown that when accommodation is a reduction of the radii of curvature of the anterior and posterior surfaces of the crystalline lens (L. F. Gamer, M. K. Jap 1997, J. F. Koretz, C. A. Cook, P. L. Kaufman 1997), increases its thickness (B. Volkov 1999, J. F. Koretz, P. J. Shum, L. S. Ko, C. L. Ng, S. L. Lin 1993, A. P. Beers, G. L. Van Der Heijde 1994, L. F. Gamer, M. K. Jap 1997) and reduced anterior chamber depth (L. F. Garner, M. K. Jap 1997). The radius of curvature of the central zone of the front surface decreases from

10.0-11.5 mm alone accommodation, up to 6.0-6.5 mm in accommodation for near vision. The rear surface changes the curvature of from 6.0-7.5 mm at rest to 5.3 to 5.7 mm in accommodation for near vision (in. A. Volkov 1999, E. Fincham 1937, W. Drexler, A. Baumgartner, O. Findl, C. K. Hitzenberger, A. F. Fercher 1997, L. F. Garner, M. K. 1997 Jap, L. F. Garner, G. Smith 1997). These values were obtained during the studies on young people eyes in vivo

Tscherning (1908) found that during the near accommodation the radius of curvature decreases mainly in the central zone of the lens, and his peripheral divisions flattens. Fincham (1925), Pflugk (1934), R. A. Schachar, D. P. Cudmore, T. D. Black 1993 and others also came to such conclusion. This fact is one of the main arguments against the accommodation theory of Helmholtz. E. Fincham (1928) explained asphericity of the lens during accommodation varies with the thickness of the capsule in its various departments, which is confirmed by many histological and electron microscopic studies. R. F. Fisher (1969) introduced the lens capsule as a shell enveloping lenticular substance and is able to slide along its surface. He also indicated that the ability of the capsule to change the shape of the lens depends on its tension, and the force directed perpendicularly to its surface. This force is determined by the radius of curvature of the surface, it is the larger, more convex shape has a surface.

The shape of the front surface of the lens is close to the ellipse, the radius of curvature of the surface increases from the center to the equator. When accommodation near lenticular substance more deformed the thickest capsule Equatorial zone of the lens. When breakdown in accommodation of the pressure Equatorial capsule decreases, mostly flattens the central zone of the lens, as the radius of curvature of the surface here is the smallest, so the force directed perpendicularly to the surface of the lens, the greatest. No change of curvature of the rear surface of the lens, the author explains the extraordinary subtlety of the capsule in this place (R. F. Fisher 1969, R. F. Fisher, B. E. Pettet 1972).

Accommodation for near vision is accompanied by a reduction of the diameter of the lens (in. A. Volkov 1999, M. W Neider, K. Crawford, P. L. Kaufman, L. Z. Bito 1990, R. S. Wilson 1997). Experimentally it was confirmed by observation through the eyes of a monkey with a remote iris (M. W Neider, K. Crawford, P. L. Kaufman, L. Z. Bito 1990).