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Epididymal growth and differentiation are altered in human cryptorchidism

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Despite the knowledge and histological classification of testicular lesions, epididymal lesions associated with cryptorchidism are not well defined and only macroscopic alterations have been reported. We have evaluated the alterations in the growth of both the epithelium and muscular wall of efferent ducts and epididymis in human patients with cryptorchidism from infancy to adulthood. In addition, by cytokeratin immunostaining we have also evaluated the stage of differentiation of each segment along the human postnatal life in these patients. A decrease is shown in the size of efferent and epididymal ducts in cryptorchid children compared with normal, age-matched controls. The height of the epithelium, muscular wall, and lumen of the cryptorchid epididymis were reduced at every age studied. This decrease in all regions was seen even in the testicular quiescent period (1 to 4 years of age). In addition, the cryptorchid epididymis grows more slowly during the transition to the pubertal period. The smaller size of the cryptorchid epididymis in pubertal and adult men compared with that of normal men is due primarily to underdevelopment of the muscular wall and a reduction in epithelial height. The pattern of growth of cryptorchid efferent ducts and ductus epididymides parallels that in normal men, except that development of the lumen and muscular layer in the cauda epididymis region are delayed. Epithelial differentiation, monitored by cytokeratin expression, is minimal in efferent ducts and throughout the epididymis of the cryptorchid male, and this is already seen in children. In conclusion, our immunohistochemical and morphometric results show a reduced development of the human cryptorchid epididymis that is already evident in childhood. They indicate that cryptorchidism is a primary congenital illness of the testis and spermatic ducts, with evident lesions from the first years of life, and suggest that surgical descent would probably not be able to completely reverse these alterations.

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