Cryptorchidism: Introductory Remarks

P.C.

Pierre C.

Sizonenko

Pierre C. Sizonenko, Division of Biology of Growth and Reproduction, Department of Pediatrics and Genetics, University of Geneva Medical School, Canton University Hospital, CH-1211 Geneva 4 (Switzerland)

© 1988 S.Karger AG, Basel 0301-0163/88/0305-0137\$2.75/0

There is a considerable literature dealing with the aetiology, pathophysiology, endocrinology, therapy and prognosis of the undescended testis. Many of the articles are based on uncontrolled studies which reach rather definite conclusions. An additional problem is the fact that investigators have not used the same criteria for the definition of cryptorchidism.

Two facts are clearly established: (1) at puberty a testis will produce testosterone regardless of its location, although it will not produce sperm unless it is located in the scrotum, and (2) an increased incidence of testicular malignancy is found among patients with maldescended testes.

There are numerous other reasons for being concerned about a unilateral undescended testis: 'One is enough as long it is normal'. Should orchidopexies be performed earlier? It has been shown that the number of spermatogonia in the undescended testis decreases after 2 years of life. Would early surgery decrease sterility and the risk of cancer? An increased incidence of cancer has been observed in the contralateral normally descended testis. Is this due to an intrinsic testicular defect of unknown origin?

In addition, a scrotal testis is less prone to trauma while an undescended testis is more likely to undergo torsion. Surgery may be recommended more than medical treatment as there is a high frequency of hernial sac at orchidopexy. One should also be aware that the contra-lateral testis often has a deficiency in germ cells. Finally, and not a minor issue, is the fact that in boys body self-image is with two testes.

Migration of the testis consists of three phases [1]. The first phase is nephric displacement, during which

the position of the testis is changed in relation to the mesonephros, which ascends. No endocrine factor is known to be responsible for this phase which lasts until 48 days after conception. The second phase is the trans-abdominal migration, which occurs between 7 and 12 weeks. Such migration might be due to outgrowth of the gubernaculum extraabdominally. Is the gubernaculum exerting a traction on the testis or is it only guiding it? Antimüllerian factor (or müllerian inhibiting substance) is thought to be involved in this process. The third phase or the transinguinal migration takes place from 7 months of gestation up to birth. Several theories have been proposed: the traction hypothesis, pulling of the testis by the epididymis, relative growth of the abdominal walls, or the abdominal pressure theory. During the second and third phases the roles for andro-gens and gonadotropins have been evoked. This has led to the possibility that the primary defect in cryptorchidism is in the hypothalamic-pituitary-gonadal axis. Such gonadotropin insufficiency would have to be transient as abnormal endocrine findings have been observed by some investigators both in unilateral and bilateral cryptorchidism during the first 2 months of life [2]. Puberty is usually normal thereafter. In general, most of the endocrine abnormalities which are observed seem to be secondary to the primary lesions which are present

in the undescended testes [3]. More recently, an autoimmune mechanism has been suggested to be responsible for cryptorchidism [4].

Medical therapy consists of the administration of human chorionic gonadotropin (hCG) or gonadotropin-releasing hormone (GnRH). With both treatments success rates vary from 10 to 80%. Should the indications

138

Introductory Remarks

for medical therapy apply only to testes palpable along the normal pathway of descent, the testis being brought manually to the neck of the scrotum? Should surgery be performed at an early age, at 2 years of age? Surgery before this age results in little improvement in spermatogonial counts [5]. Does it improve fertility? Such surgery is difficult. Before 1 year spontaneous descent can be observed. Should surgery be the first choice and performed immediately if the testes are located high in the inguinal canal or are not palpable? Or should surgery always be secondary to failure of medical therapy? Could medical treatment simplify surgery if the operation takes place quickly after the administration of hCG or GnRH [6]?

Evaluation of the results of surgery or hormonal therapy is complicated by disagreements over the definition of cryptorchidism and its clinical assessment. Correct diagnosis of the retractile testis (which is more common than the cryptorchid testis) will avoid unnecessary medical or surgical interference.

These are questions that are raised by clinicians in the evaluation of cryptorchidism and the indications for therapy. It is hoped that some of these questions will be answered during this symposium.

References

Hutson, J.M.; Donahoe, P.K.: The hormonal control of testicular descent. *Endocr. Rev.* 7: 270 (1986).

Gendrel, D.; Roger, M.; Job, J.C: Plasma gonadotropins and testosterone values in infants with cryptorchidism. *J. Pediat.* 97: 217(1980).

Schindler, A.M.; Diaz, P.; Cuendet, A.; Sizonenko, P.C.: Follicle-stimulating hormone. IV. Study of the histology of pubertal cryptorchid and scrotal testes in relation to the secretion of gonadotropins. *Fert. Steril.* 37: 828 (1982).

Poupiard, A.; Job, J.C; Luxembourger, I.; Chaussain, J.L.: An-tigonadotropic cell antibodies in the serum of cryptorchid children and infants and of their mothers. *J. Pediat.* 107: 26 (1985).

Schindler, A.M.; Diaz, P.; Cuendet, A.; Sizonenko, P.C: Cryptorchidism: a morphological study of 670 biopsies. *Helv. paediat. Acta* 42: 145 (1987).

Colodny, A.H.: Undescended testes – Is surgery necessary? *New Engl. J. Med.* 374: 510(1986).