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MEDICAL AND SOCIOLOGICAL PROBLEMS OF CRYPTORCHISM

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The problem of cryptorchidism is still of great medical and sociological importance. Normally, at the birth of a full-term boy, the testicles should be in the scrotum. One of the most common malformations is cryptorchidism. It occurs in 30% of newborns, 2-4% of boys aged 1 year, and 1.8-2% - up to 15 years. In adults, the incidence of cryptorchidism reaches 0.18-8%. Over the last 15 years, there has been a tendency to increase the number of cases of this malformation, but the reasons for this have not yet been established. In most newborns, during the first 2-3 months of life, the testicle falls on its own. The big difference in the frequency of cryptorchidism in newborns and adolescents is explained by the fact that children in the first years of life are often diagnosed with false cryptorchidism. Insufficient study of the etiology, pathogenesis and pathomorphology of cryptorchidism affected the choice of treatment. Until now, the question of the optimal timing of surgical correction of cryptorchidism, methods of fixation, indications for hormonal treatment is being discussed. The data on the restoration of spermatogenesis after testicular contraction are also contradictory. Our research has shown that this is to some extent due to ignoring the role of chromosomal abnormalities in the genesis of cryptorchidism. More than 30 hereditary syndromes have been described in 55-100% of patients with cryptorchidism. Among children with cryptorchidism, genetic abnormalities are much more common than in the general population. When cryptorchidism is a manifestation of a hereditary syndrome, the morphological structure and functional activity of the gonads is initially defective and this inferiority does not depend on the location of the testes. Regardless

of the patient's age before the operation, the method of erection and fixation of the testicle, its location, count on the full spermatogenesis in these patients there is no reason. In patients of this group, without genetic testing, it is impossible not only to choose the optimal timing and methods of treatment of cryptorchidism, but also it is impossible to predict the fertility of carriers of this malformation. Due to the fact that the Genetic Center is not able to conduct research on all patients with cryptorchidism, we strongly suggest conducting research on all children with cryptorchidism in combination with abnormalities of other organs and systems, hereditary metabolic disorders. As for the other group of patients with cryptorchidism, our studies have shown that the state of spermatogenesis in them depends on the level of testicular retention, age of the patient in whom orchidopexy was performed, morphological condition of the testis before surgery, technique (not method) and to a lesser extent method of fixing it.

Histological examinations have shown that pathological changes occur in undescended testes at the age of 6 months. One conclusion can be made: patients with this pathology should be operated on as soon as possible after the detection of this disease, before there are pathomorphological changes in the testicles. Of particular importance is the choice of tactics, method of treatment and timing. There are 3 main areas of treatment: surgical, hormonal and combined. Surgical treatment involves the effectiveness of lowering the testicle and preventing the process of degenerative changes in testicular tissue. Перша спроба оперативного втручання при крипторхізмі належить Н. Rosenmerkel (1820). The first attempt at surgery for cryptorchidism belonged to H. Rosenmerkel (1820). At the end of the 19th century, isolated cases of successful surgical lowering of the testicle were already known. In 1894, the English surgeon G. Keetley successfully used the method of temporary fixation of the lowered testicle to the skin of the thigh. This principle is widely used today. At the same time, the following questions remained unresolved for a long time: 1) up to what age the possibility of spontaneous lowering of the testicle into the scrotum persists; 2) at what age morphological changes appear and their expression in the undescended testis, as a result of which the optimal age for surgical intervention has not been established; 3) long-term results of treatment depending on the form of cryptorchidism (unilateral and bilateral, abdominal or inguinal); 4) in what terms restoration of reproductive function is possible (after restoration of morphological changes); 5) not verified terms and methods of conservative treatment (hormone therapy).

The discovery in 1927 of gonadotropins and gonadotropic activity in the urine of pregnant women (chorionic gonadotropin) and a high percentage of spontaneous lowering of dystopian testicles into the scrotum made it possible in the early 30s of the twentieth century to conduct conservative treatment. Subsequent studies have shown that after hormonal therapy, spontaneous testicular prolapse occurs rarely and is subsequently fraught with infertility. Therefore, the main method of treatment of cryptorchidism remains surgical. Moreover, intracellular lowering of the testicles should be carried out in the maximum possible age periods, and the earlier - the longer the period of testicular development in the physiological environment. At the

ultrastructural level, the feasibility of combined hormonal and surgical treatment of cryptorchidism has been proven.

An analysis of 276 case histories of patients with cryptorchidism showed that drug treatment of cryptorchidism is not effective enough. Based on the data obtained, we concluded that hormonal treatment is necessary only in cases of bilateral cryptorchidism and unilateral in severe endocrine disorders. The greatest danger of hormone therapy is the possibility of overdose of androgenic drug, which leads to suppression of pituitary and testicular function. That is, there is opposition to the goal. Fertility of men who underwent childhood surgery for cryptorchidism depends on the degree of underdevelopment of the testicles, the state of their spermatogenic function and the timing of the operation. We conducted a study of men who underwent orchiopexy in childhood and adolescence and applied for infertile marriage, showed that one of the main causes of infertility and hormonal homeostasis is a decrease in androgenic activity of the testes. In such patients, to a greater or lesser extent, there are changes in the structure of interstitial tissue, seminal tubules, spermatogenic epithelium of the testes. Damage to the spermatogenic epithelium does not occur in isolation, it is always combined with damage to the blood-testicular barrier. Most surgeons and urologists believe that this problem is purely surgical, endocrinologists believe that only hormonal treatment can have a positive effect, and sexologists who observe a large number of fertile men who have been treated with both hormones and surgery are reticent about these treatments. A significant number of doctors believe that treatment should begin with hormone therapy, and in the absence of effect - to perform surgery. In addition, the authors express a wide variety of opinions when deciding on indications for hormone therapy, surgery, choosing the optimal age for surgery. The question of the most rational method of treatment of patients with cryptorchidism remains unresolved and treatment tactics - almost unchanged for half a century, due to insufficiently studied causes of cryptorchidism.

Deciding on the physiological value of the undescended testis, its primary or secondary lesions in cryptorchidism, some proponents of surgical treatment argue that testicles that were atrophic, after erection in the scrotum increase in volume and sometimes reach normal size, and after 2-6 months after their erection in the seminiferous tubules appear spermatozoa. However, not all authors observed the described effect. The vast majority of them in no case after lowering the testicle did not observe an increase in its volume to the size of the contralateral, especially when the operation was performed on children over 5 years. Currently, there are three main areas in the treatment of patients with cryptorchidism: hormonal, surgical and combined. Of particular importance are the choice of tactics, method of treatment and timing. These questions remain relevant due to the lack of consensus among pediatricians, endocrinologists, urologists and surgeons. Some doctors still use the waiting tactic with the orientation of patients and their parents to lower the testicle into the scrotum at the time of puberty. But the testicles, which are long in abnormal conditions, are subject to dystrophic changes, which adversely affects spermatogenesis.

Treatment should be strictly individual, taking into account the age of the patient, the form of cryptorchidism, the state of the pituitary-testicular system and the degree

of hypogonadism, as well as the presence of comorbidities. Until recently, most doctors suggested starting treatment at 6 months of age using conservative therapy. However, differing data were obtained, despite the fact that the therapy was prescribed strictly individually, taking into account the secretory function of the testes and under the constant supervision of an endocrinologist. It has been proven that previously performed hormonal treatment, even in cases without self-lowering of the testicle, improves the conditions and outcome of the operation due not only to the lower location of the testicle, but also to improve its functional state. It is proposed to prescribe hormonal treatment after surgery to reduce the formation of adhesions. The result is considered positive in cases where after treatment the testicle falls into the scrotum, or when it is located in the abdominal cavity, it falls to the level of the inguinal canal. However, expectations were not met - a positive result was obtained only in 2-26% of cases. Satisfactory results were obtained mainly in patients with manifestations of hypogonadism, which is confirmed by persistently low levels of testosterone, luteinizing and follicle-stimulating hormones in their blood. The variability in the effectiveness of hormonal treatment of patients with cryptorchidism can also be explained by the lack of a differential approach and insufficient changes in the hormonal status of children before treatment. According to our data, an independent positive effect when prescribing hormones to children with low testosterone levels occurs with inguinal testicular retention and if it is not fixed. It should also be emphasized that hormone therapy without determining the hormonal status is harmful and can provoke hormonal imbalance in the body, which develops itself. Therefore, hormonal treatment should be carried out under clear indications and under the supervision of an endocrinologist.

When deciding on surgical treatment, questions arise: at what age should the operation be performed, which method of testicular erection and fixation should be chosen, is hormone therapy required (which and when)? Surgical treatment aims to lower the testicle into the scrotum and thus try to prevent the process of degenerative changes in it. According to the recommendation of the WHO Committee of Experts, since 1973, surgical correction of a dislocated testicle should be performed at the age of 2-3 years to ensure optimal conditions for local thermoregulation of the dropped testicle. However, analysis of the results of treatment over the last decade has shown that the correction of this malformation should be carried out within 6 months to 1-1.5 years. Studies show that fertility is higher in men who are treated early. The operation, if possible, should be performed in one step.

It has recently been thought that all methods of orchiopexy differ only in the methods of testicular fixation. However, one of the main problems is the normalization of blood supply, and the key to determining the success of operations is the stage of mobilization of the spermatic cord. At a high location of a dystopian testicle, apply an orchyepexy with separation of arteries and veins of a cord. Preservation of the vessels connected to the vas deferens and the muscle that raises the testicle restores spermatogenesis.

Analysis of the results of the study revealed the dependence of the results of surgical treatment on the method of fixation of the testicle in the scrotum, clarified the significant difference in the frequency of good results of orchyepexy and its

complications. With elastic fixation of the "mobile" testicle, the prototype of which is the Petrivalsky method, good anatomical results of treatment were found in $68.6\pm 5.8\%$ of patients, while tractional temporary fixation with ligature to the limb, they were $22\pm 6.6\%$, and after temporary movement of the testicle under the skin of the thigh - $8.2\pm 4.2\%$.

Evaluation of the results of surgical correction of cryptorchidism depending on the type of surgery shows that the most excellent and good results are observed in cases where there is a constant orchyepxy to the bottom of the scrotum at the age of 2 years. With age, orchyepxy, the number of excellent and good results decreases. It was also found that in inguinal retention excellent results prevailed over good, and good - over satisfactory. At abdominal retention excellent results were not observed, unsatisfactory results prevailed.

If the inguinal testicle is fixed, it and the elements of the spermatic cord should be carefully separated from the surrounding tissues and lowered into the scrotum. At the same time, the testicle should not be pulled to the bottom of the scrotum if the elements of the spermatic cord are insufficient, especially due to the application of elastic traction. This often leads to malnutrition and even vascular thrombosis. Methods of fixation of the lowered testicle should preserve the functional structure of the scrotum, largely determining the conditions for maintaining the structure and neuromuscular activity and regeneration of the testis. In such cases it is more rational to use elastic intracellular fixation of a testicle. The traction effect of external methods of fixation increases the risk of complications of orchiopey. It is better when after the operation the testicle is located higher than its trophism will be disturbed. The importance of preservation of lymphatic vessels of a testicle for its normal functioning is proved. To reduce the risk factor for damage to the lymphatic vessels of the vascular-nervous bundle of the testis in the process of its mobilization, it is necessary to perform intraoperative staining of these vessels. Along with the economical preparation of all components of the vascular-nervous bundle, it has a positive effect on the results of surgery.

Conclusions. Therefore, the method of choice for the surgical treatment of cryptorchidism should be the method of final one-step orchiopey, which eliminates the tension of the spermatic cord. The most positive results of lowering the mobile testicle are observed in the inguinal form of cryptorchidism. The results of lowering and fixation of the testicle in a fixed form of inguinal cryptorchidism are less positive. Such testicles after lowering were located near the inner or outer inguinal ring and in the inguinal canal. Good results with such fixation were observed only in $7.3\pm 2.8\%$, unsatisfactory - in $16.7\pm 4.3\%$, satisfactory - in $77.6\pm 6.7\%$. The technique of testicular lowering surgery is quite complex. It is based on three stages: I - mobilization of the spermatic cord; II - creation of a bed for a testicle in a gate and III - fixation of a testicle in the formed bed. The location of the testicle should be determined before surgery. The basis of prevention of complications of surgical correction of cryptorchidism in children is a differentiated approach to weighing the volume of mobilization of the spermatic cord depending on the clinical form of the defect and age of the patient, because this stage of the operation is Thus, it is of primary importance in the end result of orchiepey.

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