

Epidemiology, Evaluation and Surgical Treatment of undescended Testis in North Macedonia in the Period from 2011 to 2020.

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Abstract

Background; Cryptorchidism or undescended testis (UDT) is one of the most common pediatric disorders of the male endocrine glands and the most common genital disorder identified at birth. The main reasons for treatment of cryptorchidism include increased risks of impairment of fertility potential, testicular malignancy, testis torsion, and/or associated inguinal hernia

Material and Methods; The aim of this study is to show the epidemical distribution of this pathology in the republic of North Macedonia from 2011-2020 and simultaneously show the number of cases in every city of Macedonia. The number of cases (by city) is shown in Table 1.

All data is provided by the archives of The Institute of Public Health, North Macedonia.

Discussion: It is very important to find if there is a correlation between the number of undescended testis cases in North Macedonia to the environment, genetics, level of education, level of health care institutions, etc.

Reduced hormonal levels, reduced fertility and increased risk of testicular cancer are the most common side effects of no treatment or late treatment.

Conclusion; This condition of the undescended testis is very common, and the possible effects of late treatment or no treatment at all are very risky. So, we have to pay attention to the risks in order to try to provide better treatment at the right point of age.

Key words: undescended testis, epidemiology, treatment

Introduction

Cryptorchidism has evolved significantly over the past half century, with respect to both diagnosis and treatment. The current standard of therapy in the North Macedonia is orchidopexy (also referred to as orchidopexy in the literature), or surgical repositioning of the testis within the scrotal sac, while hormonal therapy has fewer advocates.

The purpose of this guideline is to provide physicians and non-physician providers (primary care and specialists)

with a consensus of principles and treatment plans for the management of cryptorchidism. The panel members are representative of various medical specialties (pediatric urology, pediatric endocrinology, general pediatrics).

Material and Methods

The aim of this study is to show the epidemical distribution of this pathology in the republic of North Macedonia in 2011-2020 and simultaneously show the number of cases of every city of Macedonia. The number of cases (by city) is shown in Table 1.

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Also, the operation type was evaluated. The operation for orchidopexy, sometimes is combined with other type of intervention, such as hernioplasty, fixation of the testis, inguinal canal exploration, testicular tissue biopsy. A systematic overview is presented in Table.2

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Cities	Cases	Cities	Cases
Kavadarci	70	Negotino	20
Kichevo	52	Gevgelija	10
Struga	115	Delchevo	15
Kumanovo	196	Resen	5
Tetovo	154	Demir Kapija	8
Skopje	948	Demir Hisar	3
Shtip	31	Berovo	15
Bitola	43	Vinica	21
Debar	48	KrivaPalanka	18
Veles	54	Valandovo	5
Gostivar	67	Ohrid	18
Prilep	45	Kratovo	7
Kochani	50	Kosovo	3
MakedonskaKamenica	2	Probishtip	6
Strumica	55	Star Dojran	1
Radovish	14	Sveti Nikole	6
Rosoman	1	Dojran	2
MakedonskiBrod	4	Pehchevo	7
Krushevo	1	Mavrovo	1
Rosoman	1	Bogdanci	3

Table 1: The number of undescended testis cases (by city)

Kind of surgical operation	Number of patients
Orchidopexio lateralis dextri	1104
Orchidopexio lateralis sinistri	804
Hernioplastica localis lateralis sinistri	14
Hernioplastica localis lateralis dextri	36
Fixatio testis regio scrotalis lateris sinistri	10
Fixatio testis regio scrotalis lateris dextri	2
Exploratio canalis inguinalis lateris dextri	3
Exploratio canalis inguinalis lateris sinistri	3
Hydrocellaectomio regio scrotalis lateris dextri	1
Semicastratio lateris dextri	1
Semicastratio lateris sinistri	2
Exploratio canalis inguinalis lateris dextri	1
Exploratio canalis inguinalis lateris sinistri	3
Biopsio testis lateris dextri	1
Meatotomio	3
Plastica praeputi	1
Biopsio testis lateris sinistri	1

Table 2: The type of operation

Discussion

It is very important to find if there is a correlation between the number of undescended testis cases in North Macedonia to the environment, genetics, level of education, level of health care institutions, etc.

This condition is very often, and the possible effects of late treatment or no treatment at all are very risky. We have to pay attention on the risks in order to try to provide better treatment at the right point of age.

Men with a history of cryptorchidism have an increased risk of testicular cancer. The increased incidence of malignancy in undescended testes varies from 49/100,000 (0.05%) to 12/1,075 (1%).[1.2] Early reports stated a significantly higher risk of carcinoma in an abdominal testis; however, inclusion of boys with abnormal karyotype and/or genitalia may have confounded the results.[3.4] One hypothesis for the etiology of the testicular cancer is that it is related to the abnormal position of the testis. However, the mild increase in cancer in the contralateral descended testis argues for an intrinsic testicular abnormality as the cause. Although earlier findings have suggested that orchidopexy does not decrease the risk of testicular cancer, more recent studies have demonstrated that orchidopexy performed before puberty decreases the risk of testis cancer compared to those boys with cryptorchidism who undergo orchidopexy after puberty.[4] However, the risk of testis cancer does not decrease to that of normal controls even when orchidopexy is performed at an early age.[4.5] The increase in the incidence of malignancy in the undescended testis warrants close follow-up, especially after puberty. Patients diagnosed for undescended testis in the childhood, should be taught how to perform a monthly testicular self-examination after puberty to potentially facilitate early cancer detection.

Formerly bilateral undescended testis means greatly reduced fertility compared with men with a history of unilateral cryptorchidism and the general male population.[6.7] One retrospective study showed a paternity rate of 62% (38% infertile) in formerly bilaterally undescended testis compared with a matched control group of 94% (6% infertile), indicating a sixfold increased risk.[8] In contrast, unilateral undescended testis had a paternity rate of 89.5%, which is similar to the level of fertility found in other studies of the general population (94%). Examination of subfertility, or time to pregnancy, shows that bilaterally undescended testis has a greatly increased waiting times to pregnancy (33.9 months compared with 11.1 months for unilateral UDTs and controls). An assessment of paternity among men with unilateral orchiectomy, whether as a result of an absent testis or orchiectomy, found no difference compared with those with unilateral cryptorchidism or control men.[9] Another study examined the association of pretreatment UDT location with fertility rates and various hormone levels (inhibin B, LH, FSH, testosterone) in adulthood.[10] The authors concluded that pre-operative location in men

with previous unilateral UDT is not a major determinant of fertility as measured by paternity reporting, sperm count, or hormone levels. A long-term study followed 91 young adults with previous surgical correction of unilateral UDT and 19 with bilateral UDT.[11] Evaluation compared initial testis bilateral testis biopsy histopathology with adult hormonal studies (LH, FSH, testosterone, inhibin B) and semen analysis.

Total germ cell count via biopsy at orchidopexy was not associated with significant changes in hormone levels or semen analysis results in adulthood. Testis biopsy at orchidopexy may have limited use in predicting future fertility in unilateral UDT but may be more clinically useful in predicting fertility potential for those with bilateral UDTs. Recently, a long-term study followed 91 young adults with previous surgical correction of 963 bilateral UDT and 87 with unilateral UDT. Evaluation compared initial testis biopsy histopathology with adult hormonal studies (FSH) and semen analysis. In bilateral cryptorchidism the mean age corrected number of germ cells per transverse tubule positively correlated to sperm density and to volume of pair of testes and negatively correlated to serum FSH. In cases of no germ cells there was approximately a 75 to 100% risk of infertility, based on a lack of germ cells in one or both testes. [12] In unilateral cryptorchidism, a lack of germ cells in testicular biopsies taken at surgery was associated with approximately 33% risk of later infertility. Between ages 2 and 12 years the timing of unilateral orchidopexy may vary without an effect on subsequent fertility potential. When biopsy at surgery lacks germ cells in unilateral cryptorchidism, there is an approximate 33% age independent risk of subsequent infertility. Otherwise, patients may be fertile after unilateral orchidopexy between ages 2 and 12 years. [13, 14]

Conclusion

Continued research should also investigate the effects of genetic susceptibility and environmental toxins on the risk of cryptorchidism and/or testicular anomalies.

Studies of paternity in patients surgically treated for cryptorchidism, and its correlation with semen analysis, androgen function, and testis histology data as available, are needed.

Finally, further studies are needed to determine whether orchidopexy between six and eighteen months of age is superior to later surgical treatment in improving fertility potential in adulthood.

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