

EPIDEMIOLOGICAL STUDY ON UNDESCENDED TESTIS

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Abstract

Although half a century ago doctors believed undescended testis could descend in the scrotum anytime during the childhood up to the beginning of puberty, today it is accepted that both testes should be in the bursae at the time of birth (in 3 – 4% of cases this is not the situation). Otherwise, according to the most authors, one can wait at most one year (incidence drops to 1%), and then, during the second year of life, the testicular descent must be performed, as pathological changes in the undescended testis are visible as early as from the age of two thanks to the improvement of optical microscopy. However, an important number of cases are still diagnosed as late as around puberty, the purpose of this study being to evidence some of the possible causes that lead to this delayed diagnosis, which results in the modification of condition prognosis.

Key words: undescended testis, epidemiological aspects

Introduction

Half a century ago doctors believed undescended testis could descend in the scrotum anytime during the childhood up to the beginning of puberty. There are still many authors who await the spontaneous descend of the testis until the puberty, and they indicate no medical or surgical treatment during this period of time¹.

At a later time, the optical microscopy shows the presence of lesions in the undescended testis around the age of seven – ten years; as a result, initiation of cryptorchidism treatment between seven and ten years of age (beginning of puberty) has been required.

By constant improvement of optical instruments, objectification of several pathological changes at the age of two has been made, electronic microscopy studies revealing anatomic-pathological changes in undescended testis as early as from the age of one².

Today it is accepted that both testes should be in the bursae at the time of birth (in 3 – 4% of cases this is not the situation). Otherwise, according to the most authors, one can wait at most one year (incidence drops to 1%), and then, during the second year of life, the testicular descent must be performed³.

On the contrary, there are many studies in the literature that reveal the performance of many orchidopexies around puberty, which may be explained either through the belief of some authors that the spontaneous descent can be waited to this age, or through the existence of acquired undescended testis cases (this situation is more and more often described in the recent studies) or by neglecting the

diagnosis of this affection to this age, not many references trying to explain the causes of this last situation⁴.

The need to identify the causes that delay the early diagnosis of undescended testis were the basic arguments for choosing this particular research theme.

Objectives

During this study I have constantly tried to find answers to a series of epidemiological aspects. This is why I have elaborated a list of objectives to be followed during the study:

1. to establish the incidence of undescended testis in the apparently healthy infantile population, as compared with the frequency of surgical pathology in children.
2. to establish the diagnosis age in the undescended testis.
3. to establish the degree in which the patients with undescended testis attend the dedicated medical services in relation to:
 - environment of origin
 - social-economical conditions

Material and method

The clinical-statistical study has been performed within the Pediatric Surgery and Orthopedics Clinic of the County Emergency Clinical Hospital Arad. 77 children, aged between 0 and 17 years, with undescended testis were here examined, hospitalised, investigated and treated medically and/or surgically between 2006, January 1st and 2008, December, 31st.

In order to acquire the useful data for our study, the detailed analysis of examination and hospitalisation registers, and clinical observation forms was required. We took out a series of epidemiological data that were later processed following a standardised protocol in order to clarify both the circumstances that lead to the diagnosis of this condition, and the further implication over the therapeutic approach.

Within the Pediatric Surgery and Orthopedics Clinic and the specialty Ambulatory were also performed the periodic clinical re-examinations of the operated patients.

Results and discussions

Within 2006, January 1st and 2008, December, 31st, 77 children with undescended testis were treated in the Pediatric Surgery and Orthopedics Clinic of the County Emergency Clinical Hospital Arad.

Although this study focuses on a time interval of only three years, given the number of analysed cases (77), I consider that the lot is statistically representative, as we find in the literature many very valuable papers performed on even less numerous groups of patients than the present one.

1. Annual incidence of undescended testis cases

Out of the 77 cases of undescended testis, 28 were recorded in 2006, 24 in 2007 and 25 in 2008 (Table 1, Figure 1).

A relatively equal distribution of the number of cases is seen, in each of the three years being recorded approximately 1/3 out of 77 total cases, with a insignificant peak of cases in 2006, as compared with the 2007 and 2008 years.

Therefore, we can say that 25 cases of undescended testis are diagnosed and treated annually.

2. Incidence of cases in relation to the number of hospitalisations

When relating the number of cases to the total number of hospitalisations in the respective years, the following results were obtained:

- 2006: 28 cases of undescended testis out of 2247 hospitalisations, which represents 1.24 % of cases;
- 2007: 24 cases of undescended testis out of 2199 hospitalisations, which represents 1.09 % of cases;
- 2008: 25 cases of undescended testis out of 2490 hospitalisations, which represents 1 % of cases (Table 1).

Table 1. Incidence of cases in relation to the number of hospitalisations.

Year	2006	2007	2008
Cases of undescended testis	28	24	25
Number of hospitalisations	2247	2199	2490

We can see the constancy of the relation between the undescended testis cases as compared to the total number of cases of surgical conditions of the patients hospitalised in the respective year in a graphic illustration.

Within the studied interval the global incidence of the condition, calculated as total number of cases (77) against the total number of hospitalisations (6936), was 1.11 % (Figure 5). In other words, in every 1000 children with surgical conditions, 11 cases of undescended testis were discovered.

3. Distribution of cases depending on urbanisation degree

Distribution of cases based on urbanisation degree is a way in which we are able to indirectly estimate the level of population's medical education and the degree of parents responsibility to the children.

Following this criterion, most of the cases came from the urban environment (43, compared with 34 cases from the rural environment), which is most probably the result of a better patients' attendance of the specialty medical services (Table 2).

Table 2. Distribution of cases depending on urbanisation degree.

Environment	Urban	Rural
Cases	43 (55,84%)	34 (44,16%)

4. Distribution of cases depending on age

Considering that, during the growth and development period, the child undergoes medical examinations when entering different collectivities (nurseries, kindergartens, schools, camps etc.), situations in which the possibility of random diagnosis of undescended testis cases occurs, we have considered useful and interesting the study of cases distribution in relation to the growth and development stages, as they are defined within the puericulture notions:

- 0-1 year – age of newborn and infant;
- 1-3 years –toddler;
- 3-7 years – preschool child;
- 7-11 years – school child;
- 11-14 years – pubescent;
- 14-17 years – teenager.

The number of cases based on age and origin environment for the studied interval are synthesised in the following table:

Table 3. The number of cases based on age group and origin environment.

2006-2008		
Age group	Urban	Rural
0-1	3	1
1-3	7	4
3-7	14	10
7-11	10	9
11-14	8	7
14-17	1	3

When synthesising these results, we noticed a delay in the diagnosis of the condition for the cases coming from the rural environment, most probably explained by a decreased access to the specialty medical services, and also a lower medical education level.

Part of the undescended testis cases diagnosed between 11 and 17 years of age may not be congenital, but acquired. There are more and more studies today that indicate a part of testes present initially in the scrotum may later ascend in the inguinal channel due to cremasteric muscle hypertonicity. The situation is frequently met in children with neurologic conditions experiencing muscle spasms.

By follow-up studies, as Villumsen study, it has been shown that in the spontaneously cured congenital cryptorchidism, ascension of testes requiring surgery may reoccur later in the childhood. Description of acquired cryptorchidism is related to the observation that a great number of older children undergo orchidopexies, in spite of recommendations for treatment during the early childhood. In a study regarding boys with undescended testis performed by Hack in 2003, the acquired cryptorchidism ratio was almost three times greater than that of congenital cryptorchidism. The same author shows in 2007 that, due to the high ratio of spontaneous descent in the acquired cryptorchidism, it has been proven that delaying the orchidopexy in the pre-puberty period decreases the number of delayed orchidopexies, but the consequences of delaying orchidopexy on health can be highlighted only after follow-up studies are performed. In a recent study, acquired cryptorchidism prevalence was of up to 2.2% in boys aged between 6 and 13 years^{5,6}.

Within this context, there is the possibility that in the rural environment to be more cases of acquired undescended testis, given the increased muscle tonicity in children coming from this environment, due to the more intense physical activity⁷.

Conclusions

1. As regards the frequency of undescended testis within the infantile population, 25 new cases are diagnosed and treated annually.

2. Global incidence of this condition within the studied interval, calculated by relating the total number of cases to the total number of hospitalisations, was of 1.11 % (with an annual variation between 1-1.24 %). In other words, in every 1000 children with surgical conditions, 11 cases of undescended testis are discovered.

3. As regards the urbanisation degree, most of the cases came from the urban area; (43, as compared with the 34 cases from rural environment), which is most probably due to a better patient attendance of the specialty medical services.

4. Weighing the balance in the favour of urban area is done considering the age groups of 0-1 year, 1-3 years and 3-7 years, where the number of cases coming from this environment exceeds the number of cases coming from the rural area.

5. For age groups of 7-11 years and 11-14 years, we have recorded an alternation of the environment of origin of undescended testis cases so that, totalling the cases from age groups of 7-11 years and 11-14 years, we have come to an urban/rural report of 1:1.

6. The delayed diagnosis of undescended testis for the cases coming from the rural area is most probably explained by a more limited access to the specialty medical services, but also through a lower medical education level.

7. It has to be mentioned that a part of undescended testis cases diagnosed between 11-17 years might be acquired, and not congenital; there are more and more studies today indicating that a part of testes initially present in the scrotum may later ascend in the inguinal channel due to a hypertonicity of the cremasteric muscle.

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