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EVALUATION OF THE AGE AT ORCHIOPEXY

PROCENA UZRASTA U KOM SE IZVODI ORHIDOPEKSIJA

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Summary

Introduction. Undescended testis is the most common congenital anomaly of the male urogenital tract. The main issues associated with this condition are decreased fertility and an increased risk for testicular cancer, which are minimized if early orchiopexy is performed. The objective of this study is to evaluate the age at orchiopexy at the Institute of Child and Youth Health Care of Vojvodina and to compare it to international guidelines (American Urological Association, Canadian Urological Association and European Association of Urology).

Material and Methods. A retrospective study included 457 patients operated on between 2010 and 2015. The recorded data were analyzed by Microsoft Excel Office 365 using means, medians, minimums, maximums and standard deviations where appropriate. The patient age and current recommendations for timing of orchiopexy were analyzed as well. Results. The mean age at orchiopexy was 69.47 months, and the median age was 64 months. Considering each year separately, no significant differences between mean and median age at orchiopexy were found. The percentage of orchiopexies performed before 24 months was 29% and 5% were performed before 12 months of age. The mean age at orchiopexy was 51.47 months later than recommended by current international guidelines.

Conclusion. This study confirmed that the age at orchiopexy in our sample was significantly delayed than recommended. It is necessary for all medical practitioners involved in child health care to share new information, trends and diagnostic-therapeutic algorithms about undescended testis and consequences of late treatment.

Key words: Orchiopexy; Cryptorchidism; Infant; Child, Preschool; Age Factors; Early Diagnosis; Time-to-Treatment; Physician’s Role; Practice Guideline

Introduction

Undescended testis occurs in 1 – 4% of full-term and in 1 – 45% of premature infants. It is the most common congenital anomaly affecting the male urogenital tract.

This condition negatively affects the development of the testis [1–3]. The main issues associated with undescended testis are decreased fertility and an increased risk for developing testicular cancer. This is due to the body’s core temperature, which is not optimal for further development and functioning of the testis, whose optimal temperature is 33 degrees Celsius, such as in the normal scrotal position [2, 4].

The undescended testis has a normal histological structure at birth. This means that germ cells are the prominent cells in the seminiferous tubules (testicular parenchyma). In the undescended testis, Sertoli and...
Leydig cells are not affected by increased temperature, whereas germ cells progressively decline. That is why the histological structure shows an apparent increase in the number of Leydig cells. There is also thickening of the basement membrane. By two years of age, 40% of undescended testes completely lose their germ cells [2, 5, 6].

Screening for undescended testis is done at every routine well child visit, when the finding is recorded in the medical history, and by physical examination. In medical history it is important to emphasize the corrected age and positive family history of an undescended testis. The corrected gestational age gives a more accurate representation of the developmental stage of a preterm infant than the actual age. It is calculated by subtracting the number of weeks of prematurity from the actual age.

Standard physical examination is done in supine and upright positions. For neonates and infants, physical examination is completed in a supine frog-legged position (Figure 1). It must be performed at comfortable room temperature and with warm hands to minimise cremasteric reflex activation [3, 5].

During physical examination, a fine distinction must be made between a true undescended testis and a retractile testis. A true undescended testis either cannot be manually positioned into the scrotum, or if it is positioned into the scrotum it immediately retracts. Retractile undescended testes can be manually placed into the scrotum and stays in the scrotum for some time before retracting again [3]. Our professionals informally call a true undescended or gliding testis retractile, whereas retractile testes are referred to as migrating testes. In everyday professional communication this can be a confusing and serious problem.

A true undescended testis has never been visualized in the scrotum by the physician or parents. On the other hand, retractile testis was present in the scrotum at birth and parents report seeing the testicle in the scrotum periodically [3].

Retractile testis is considered as a normal variant, where the cause for retraction is an overactive cremasteric muscle. These patients require close follow-up. The majority of retractile testes reside in the normal scrotal position after puberty. This is due to higher concentrations of androgens which diminish the cremasteric reflex. On the other hand, a minority of them progress to so-called acquired or ascended testes which require surgical treatment by orchiopexy [3].

If the testis does not spontaneously descend before six months of (corrected) age, the patient must be immediately referred to a pediatric urologist or pediatric surgeon. The decision is based solely on the medical history and physical examination [3].

During the last years, many researchers have done a great work summarizing new knowledge about this subject. In order to minimize the risk of suboptimal fertility and increased risk for testicular cancer, the American Urological Association (AUA) recommends orchiopexy between 6 and 16 months of age, the Canadian Urological Association (CUA) between 6 and 12 months, and the European Association of Urology (EAU) between 12 and 18 months of age [1, 2, 7].

An undescended testis is usually treated by open or laparoscopic orchiopexy, with a one- or two-stage Fowler-Stephens procedure. Hormonal therapy is very rarely used for acquired undescended testis [3, 5, 8, 9].

The purpose of this retrospective study is to evaluate the average age at orchiopexy at the Institute of Child and Youth Health Care of Vojvodina and to make a comparison with current international guidelines.

Material and Methods

This retrospective review was performed after obtaining permission from the institutional Ethics Committee. Data were analyzed for 457 patients that were hospitalized for an undescended testis. These patients underwent exploration and subsequent orchiopexy between January 2010 and December 2015 at the Clinic of Pediatric Surgery of our Institute.

The data were analyzed by Microsoft Excel Office 365 for: mean, median, minimum and maximum values. The average age at orchiopexy was determined. The data were compared with the current international guidelines.

Abbreviations

AUA – American Urological Association
CUA – Canadian Urological Association
EAU – European Association of Urology
SD – standard deviation

Figure 1. Proper testicular examination in the supine, frog-legged position

Slika 1. Pravilan način pregleda testisa u ležečem, žabljem položaju deteta
Table 1. Mean, median, minimum and maximum age at orchiopexy (months) and SD for surgeries performed between January 2010 and December 2015

<table>
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<th>Year</th>
<th>N</th>
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<th>Median</th>
<th>Minimum Age</th>
<th>Maximum Age</th>
<th>SD/SD</th>
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<tr>
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<td>72.01</td>
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<td>9</td>
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<td>0</td>
<td>68.86</td>
<td>66</td>
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<tr>
<td>2013</td>
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<td>1</td>
<td>68.63</td>
<td>54</td>
<td>8</td>
<td>197</td>
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<td>73.94</td>
<td>67</td>
<td>12</td>
<td>186</td>
<td>49.56</td>
</tr>
</tbody>
</table>

Table 2. Mean, median, minimum and maximum age at orchiopexy (months) and SD by year of surgery from January 2010 to December 2015

Results

A total of 457 patients were included in this study. Data for 2 patients was incomplete. For patients who underwent surgery between 2010 and 2015, the mean age at orchiopexy was 69.47 months, and the median age was 64 months (SD +/- 49.23 months, range 8 – 332 months) (Table 1). Considering each year separately, no significant difference was found between mean and median age at orchiopexy (Table 2).

The results in Table 3 show that 124 (29%) orchiopexies were performed in patients younger than 24 months. Considering each year individually, no significant difference was found. The results in Table 4 show that only 29 (5%) orchiopexies were performed in patients younger than 12 months.

Discussion

The optimal time for surgical treatment of an undescended testis has been debated for decades. It was speculated that earlier orchiopexy would lead to better fertility, and recommended age at orchiopexy has steadily declined. In the 1950’s, the age at orchiopexy was 10 – 15 years, in the 1970’s it was 5 – 6 years, in the late 1970’s and early 1980’s it declined to 2 years of age. Current consensus for the optimal age for performing orchiopexy is between 12 and 18
months [11–13]. Guidelines from AUA, CUA and EAU were considered in our study [3, 5, 7, 10]. Our sample consisted of 455 patients operated on between 2010 and 2015. The mean age at orchiopexy was 69.47 months, and the median age was 64 months. Our results indicate that the mean age at orchiopexy was 51.47 months and the median age was 32 months later than recommended. These results are not unusual, because the other authors found a similar gap between the current guidelines and clinical practice. Williams et al. (2018) found that the median age at orchiopexy in some United States hospitals (New Jersey, Maryland and Florida) was between 48 and 60 months. A number of papers published worldwide have observed the average age at orchiopexy between 19 and 61 months, which almost corresponded with our findings [7, 13, 14].

Our sample has shown that 124 patients (29%) underwent orchiopexy before 24 months of age and only 29 patients (5%) before 12 months. Again, our results reflect those found in the literature. Williams et al. reported that between 1999 and 2008, 43% of patients were operated on before 24 months. They also reported that in an institution in West Virginia, 21% and 30% of patients were operated on before 12 months and 24 months, respectively [7].

We found no significant age difference at orchiopexy when we considered each year separately. We also analyzed the percentage of orchiopexies performed before 24 months of age and 12 months of age for each year individually, and found no statistically significant difference. These results are very similar with the previous study performed in our institution which covered the period from 2007 to 2014 [14].

Finally, we compared our results with the mean age at orchiopexy recommended by the leading world associations. We found that the mean age at which orchiopexy was performed was 69.47 months, and median age was 64. This shows that the age at orchiopexy is later than recommended by the leading urologic associations.

The possible reason for the discrepancy between current guidelines and clinical practice is inadequate triage, as suggested by Romao [15]. He recommends pediatric urologists to educate family physicians and pediatricians in order to improve their skills in physical examination and referral practice. Physical examination of testes can be particularly challenging due to the natural anxiety of the child during such an examination. It must be performed at every well-child visit as recommended by Mau [3].

Current pediatric urology referral guidelines recommend urologists to perform physical examinations in cases with a presumed undiscovered testis, without ordering additional tests. However, some primary care physicians still order additional tests before referral to pediatric urologists and this results in a delayed diagnosis and treatment [3, 15].

Another possible reason to explain the discrepancy between the current guidelines and practice is the lack of conviction concerning the recent guidelines. As Niedzielski has remarked, the age at orchiopexy has declined steadily in the last decades [11]. Since general practitioners have a lot of guidelines to follow, some of them are not informed about new recommendations about the age at which orchiopexy should be performed.
Romao recommends that pediatric urologists should update primary care physicians about changes in the guidelines. Primary care physicians and pediatricians are the ones that have the first contact with the patient and refer them to the urologists and pediatric surgeons [15]. The confusion about the timing of testicular descent as well as the causes may also contribute to delayed referral to a pediatric urologist. The timing of testicular descent has been debated for years and this is reflected in the changes in guidelines that followed new discoveries every few years. However, some primary care physicians still believe that an undescended testis can spontaneously descend after six months [3, 11].

**Conclusion**

This study confirmed that in our sample the age at orchiopexy was significantly delayed than recommended by the leading world pediatric urology associations. It is necessary for all medical practitioners involved in the care of children to share new information, trends and diagnostic-therapeutic algorithms about undescended testis and consequences of late treatment.

**References**