Abnormalities of the External Genitalia in School-Age Boys in Turkey: A Contemporary Epidemiologic Evaluation

Türkiye'de Okul Çağındaki Erkek Çocuklarda Dış Genital Anomaliler: Epidemiyolojik Değerlendirme

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ABSTRACT Objective: Our aim is to determine the prevalence of undiagnosed external genital abnomalities in school-age boys in our region. **Material and Methods:** Five thousand sixty-one Turkish primary school boys between the ages of 7 and 13 years (mean age 10.9 years) were examined regarding to external genital abnormalities. Physical examinations were performed in standing position initially and then in supine position when necessary. All boys were questioned closely regarding symptoms (such as scrotal pain) and awareness of any abnormality. **Results:** Abnormalities of the external genitalia were found in 243 (4.80%) of the boys. Of these, 75 (1.48%) had varicocele, 73 (1.44%) had undescended testis, 40 (0.79%) had indirect inguinal hernia, 29 (0.57%) had hydrocele and 23 (0.45%) had hypospadias. Other rarely diagnosed abnormalities were poliorchidism, paratesticular mass and penile curvature. Of the boys with varicocele, 14.6% had grade I, 77.3% had grade II and 8% had grade III disease according to Dubin and Amelar's grading system. Fifty percent of undescended testes were right-sided and the others were either left-sided or bilateral. **Conclusion:** High prevalence of external genital abnormalities in our region is remarkable. Poor primary healthcare and socio-economic factors might have been contributed to this issue.

Key Words: Child; epidemiology; urogenital abnormalities

ÖZET Amaç: Amacımız bölgemizde okul çağındaki çocuklarda tanı konmamış dış genital anomalilerin görülme sıklığını belirlemektir. **Gereç ve Yöntemler:** Yedi ve 13 yaş arasındaki 5061 Türk ilkokul erkek çocuğu (yaş ortalaması 10.9 yıl) dış genital anomaliler açısından incelendi. Fizik muayene başlangıçta ayakta pozisyonda ve sonra gerektiğinde yatar pozisyonda yapıldı. Tüm çocuklar ilgili belirtiler (skrotal ağrı gibi) ve bildikleri herhangi bir anormallik açısından yakından sorgulandı. **Bulgular:** Dış genital anomali 243 çocukta (%4.80) bulundu. Bunlardan 75'i (%1.48) varikosel, 73'ü (%1.44) inmemiş testis, 40'ı (%0.79) indirek kasık fıtığı, 29'u (%0.57) hidrosel ve 23'ü (%0.45) hipospadias idi. Diğer nadir teşhis edilen anomaliler poliorşidizm, paratestikülar kitle ve penis eğriliği idi. Varikoselli erkek çocukların, Dubin ve Amelar's derecelendirme sistemine göre %14.6'sı evre I, %77.3'ü evre II ve %8'i evre III idi. İnmemiş testislerin yüzde 50'si sağ taraflı idi ve diğerleri ya tek taraflı veya iki taraflı idi. **Sonuç:** Bölgemizde dış genital anormalilerin yüksek yaygınlığı dikkat çekicidir. Zayıf primer sağlık koşulları ve sosyo-ekonomik faktörlerin bu duruma katkısı olabilir.

Anahtar Kelimeler: Çocuk; epidemiyoloji; ürogenital anomaliler

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Reports in last years have suggested an increase in the incidence of genitourinary abnormalities in previous 50 years, attributed to environmental factors.[1] Routine inspection of the genitalia should be considered as an essential component of the regular examination of children, especially for boys, due to higher prevalence of external genitourinary anomali-

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es. Much information can be gathered by screening for these abnormalities and by investigating specific genitourinary symptoms as they occur. The health status of external genitalia in pre-pubertal boys and adolescents was studied by some authors from several countries;[2-7] however, little has been published on the incidence and prevalence of genital anomalies in Turkey. These studies may provide theoretical evidence for prevention and treatment of male external genitalia diseases as well as important data for studies on pediatric urology and andrology.

The aim of this study is to determine the prevalence of external genitalia abnormalities in school-age boys in our milieu.

MATERIAL AND METHODS

In this study, 5061 primary school boys between the ages of 7 and 13 years (mean age 10.9 years), who lived in Kocaeli, (a city in the northwest region of Turkey) were examined by a urology resident in the last year of this training and an urologist. The regional government authority approved the study protocol. Physical examinations were performed in standing position initially and then in supine position, when necessary. All boys were questioned closely regarding symptoms (such as scroal pain) and awareness of any abnormality. The families of the children, were informed about the disease, its consequences and possible complications in case of an abnormality. Some of the children were referred to the University Hospital for further evaluation and treatment.

RESULTS

External genital abnormalities were detected in 243 (4.80%) of 5061 boys. The most frequently diagnosed pathologies were varicocele (1.48%) and undescended testis (1.44%). The other abnormalities were indirect inguinal hernia (0.79%), hydrocele (0.57%) and hypospadias (0.45%) (Figure 1).

All of the varicocele cases were one-sided and all but one were on the left side. The majority of patients (70 of 75) were asymptomatic. Of the boys with a varicocele, 14.6% had grade I, 77.3% had grade II and 8% had grade III disease according to Dubin and Amelar's grading system.

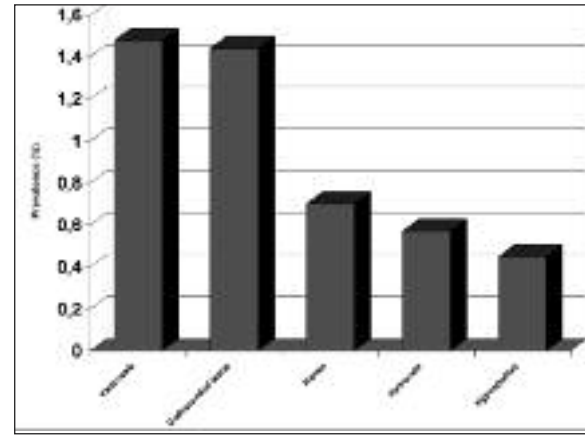

FIGURE 1: Percentage of detected anomalies.

Thirty-seven of 73 (50%) undescended testes cases were on the right side while 27 (37%) were on the left side. Nine boys (12%) had bilateral undescended testes. The majority of the undescended testes were palpable (78/82 testes). All of four non-palpable testes were unilateral cases and all were on the left side. Of the palpable testes, 69 (88%) were located at pre-pubic region, six (8%) at inguinal and 3 (4%) at superficial inguinal pouch.

The most common location of urethral meatus in hypospadias cases was glandular region (61%). Six (26%) children had coronal, and three (13%) had subcoronal hipospadias.

DISCUSSION

An external genital abnormality such as undescended testis or varicocele may affect testicular function and fertility negatively; thus, early diagnosis and differential diagnosis of clinically important disease is crucial. Undescended testis and its complications were well studied and determined.[8] Various authors have criticized the opinion claiming that ligation of a varicocele may improve the potential for future fertility.[9,10] Several reports showed that the prevalence of pre-pubertal varicocele was 0-1% and the prevalence of varicocele in adolescents was between 2% and 16%.[11] The prevalence increased from 14.5 to 21.7 as the ages increased from 14 to 18.[12] The peak prevalence of varicocele occurs at 15 year of age.[13] This increased prevalence is felt to be related to the physiologic changes that occur dur-

ing puberty.[14] The prevalence of pre-pubertal varicocele in our study was higher than the prevalence reported in another study performed in another part of Turkey (1.48% versus 0.96%).[15] Particularly after the age of 11, pre-pubertal varicocele becomes more prominent.[14] and this difference is related to selection of age groups (7-13 versus 7-10 years). Data analysis of the subgroup in our study (7-10 years) showed a similar prevalence with the former research (1.01%). The pathogenetic role of varicocele in male infertility is still controversial. There are several reports in the literature indicating that high grade varicocele affects testicular volume; however there is no established standard therapy for varicocele in children and adolescents. Suggested algorithms include close observation of testicular volumes for operated and non-operated patients.[16,17]

There are several reports suggesting an increasing incidence of male hypospadias[18,19] Remzi et al.[20] reported a prevalence of 0.40% among Turkish elementary school children in 1980.[20] Another prevalence study from Turkey performed in 2003 and published in 2005 showed 0.39% hypospadias prevalence among children between 7-15 years of age.[21] Our results (0.45%) showed a slight increase in hypospadias prevalence compared to these two studies; however it should be kept in mind that all of these studies focus on undiagnosed genital abnormalities among children at school age rather than the true prevalence of hypospadias in newborns.

A similar study was performed in the same city (Kocaeli) by a different group in 1995.[22] They have examined 6381 primary school boys and found undescended testes in 1.43% of the boys. There is no difference between their results and our results (1.44%) for this specific disease. On the other hand, in their study, total prevalence of hypospadias, varicocele and hernia was lower compared to our study (1.34% vs. 2.63%). Unfortunately the study was focused on social and medical aspects of undescended testis and the prevalence of the other abnormalities, but the prevalences of the diseases were not given separately; thus it is not clear which specific pathology was responsible for this difference.

A recent study from Turkey showed 0.73% prevalence of undescended testis among 1500 school-age children aged between 7 and 12 years.[23] Some other studies from other regions of the world reported similar results.[24,25] Our study showed higher prevalence rates compared to these studies.

CONCLUSION

This study showed that primary school boys have poor healthcare for external genital abnormalities. There was no difference in the prevalence of undescended testis between our study and another study which was completed in the same area in 1995. The rate of pre-pubertal varicocele was almost same with undescended testis. The high prevalence of undiagnosed external genital abnormalities may be attributed to healthcare system and socio-economic factors.

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