Short communication

# Inguinal hernias and genital abnormalities in young Jordanian males

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**الفتق الأُربي والتشوُّهات التناسلية في الشباب الأردنيِّين الذكور** أسعد محمد حمدي غزال

الخلاصة: تم إجراء هذه الدراسة بهدف توثيق معدل انتشار الفتق الأربي، والمبال التحتاني، والخصية غير النازلة، والقيلة الدوالية، لدى 3057 شاباً تقدَّموا للالتحاق بالجناح العسكري بجامعة مؤتة في جنوب الأردن، وتتراوح أعمارهم بين 17 و20 عاماً. وبيَّنت الدراسة أن نحو 250 منهم يعانون من واحدة من هذه الحالات الأربع: إذ يعاني نحو 93 (30.٪) من فتق أُربي؛ و15 (0.5.٪) من الخصية غير النازلة (26.7٪ منها ثنائي الجانب)؛ و59 (1.9.٪) من المبال التحتاني؛ و83 (2.7.٪) من القيلة الدوالية (98.79٪ منها على الجانب الأيسر). وفي حين نجد أن معدلات انتشار الفتق الأربي والخصية غير النازلة تضاهي معدلات الانتشار الدولية، فإن معدلا انتشار المبال التحتاني هو أعلى من معدلات الانتشار الدولية، كما أن معدل انتشار القيلة الدوالية هو أقلُّ من معدلات الانتشار الدولية. وسوف يساعد نظام لتسجيل عيوب المواليد الخلقية في تخطيط استراتيجيات الوقاية والمعالجة.

ABSTRACT This study was carried out to document the prevalence of inguinal hernia, hypospadias, undescended testis and varicocele in 3057 male applicants to the military wing of Mu'ta University in the south of Jordan. Age range was 17–20 years. A total of 250 men had one the 4 conditions: 93 (3.0%) had inguinal hernia; 15 (0.5%) had undescended testis (26.7% bilateral); 59 (1.9%) had hypospadias; 83 (2.7%) had varicocele (98.79% on the left side). Prevalence of inguinal hernia and undescended testis were comparable with international prevalence rates, while the rate for hypospadias was higher and that for varicocele lower. A birth defects registration system would help in planning preventive and treatment strategies.

#### Hernies inguinales et anomalies génitales chez de jeunes Jordaniens

RÉSUMÉ La présente étude a été réalisée pour documenter la prévalence de l'hernie inguinale, de l'hypospadias, de la cryptorchidie et de la varicocèle chez 3057 candidats à l'inscription dans la section militaire de l'Université Mu'ta dans le sud de la Jordanie. L'âge était compris entre 17 et 20 ans. Au total, 250 hommes avaient l'une des quatre affections suivantes : 93 (3,0 %) avaient une hernie inguinale ; 15 (0,5 %) présentaient une cryptorchidie (bilatérale pour 26,7 %) ; 59 (1,9 %) avaient un hypospadias ; 83 (2,7 %) avaient une varicocèle (98,79 % du côté gauche). La prévalence de l'hernie inguinale et de la cryptorchidie était comparable aux taux de prévalence internationaux, tandis que le taux était plus élevé pour l'hypospadias et plus bas pour la varicocèle. Un système d'enregistrement des malformations congénitales permettrait de planifier les stratégies de prévention et de traitement.

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## Introduction

In any community, statistical studies of medical problems are very important as they can determine the size of the problem and help the health authorities to put appropriate plans in place to deal with them, especially for congenital conditions.

Inguinal hernia in children and young adults is usually the result of patent processus vaginalis. It can be life threatening, or can lead to loss of the testis or part of the intestine if strangulation occurs. Incidence of inguinal hernia ranges between 0.8% and 4.4% [1,2]. According to the American Academy of Pediatrics, 5 out of 100 children have inguinal hernias (more boys than girls), some may not have symptoms until adulthood [3].

Hypospadias is a congenital defect of the penis resulting in incomplete development of the penile urethra, the external urethral meatus may be anywhere along the ventral surface of the penis, ventral surface of the glans (glanular hypospadias), in the penis shaft distally (distal penile hypospadias) or proximally (proximal penile hypospadias), down to the scrotum (scrotal hypospadias) or even in the perineum (perineal). As the position of the external meatus becomes more proximal, ventral shortening and curvature during erection are more likely [4]. This may lead to sexual dysfunction in adulthood. In addition, the patient may be unable to urinate standing due to deviation of urine stream and may need to sit to urinate [5] and this will result in emotional and psychological stress for the patient and his family. Gallentine, Morey and Thompson found an incidence of 0.07% in a multiracial sample in the United States of America, with no racial difference [5].

Undescended testis is the failure of 1 or both testes to descend to the scrotum; this condition was first described in 1786 by Hunter [6]. In undescended testis there is increased incidence of infertility, torsion, malignancy and exposure to trauma. The presence of the testis in an obscure place may lead to delay in diagnosis of malignancy.

Varicocele is pathologic dilatation, elongation and varix-like formation of the spermatic veins that form the pampiniform plexus [7]. It is considered a common cause for infertility as it elevates the temperature of the testis and this disturbs spermatogenesis and decreases its volume [7,8]. Varicocele occurs in 15% of men [9,10]. It is known that varicocele leads to functional disturbance of the testis and surgical treatment leads to improvement of semen quality [11].

Jordan, along with other developing countries, lacks a proper medical registration system. There are, therefore, no official records documenting the incidence or prevalence of these 4 conditions. This has a negative effect on national health care programmes as such a system could provide medical researchers and health planning authorities with the statistical information necessary for future health strategies.

Therefore, data were collated over 2 consecutive years for applicants to the military wing of Mu'ta University, who come from all geographic areas of the country. This provided an opportunity to document the prevalence of certain surgical conditions among young Jordanian males. It had been noticed that these were the 4 commonest conditions that were grounds for the university applicants to fail the medical check-up.

## Methods

Data on inguinal hernia and 3 genital abnormalities were collected during the medical examinations for all applicants to the military wing of Mu'ta University, Karak, Jordan. A total of 3057 male applicants were examined in 2 consecutive years, August 1992 and August 1993. Age range was 17–20 years. Applicants are categorized into 10 groups according to the father's birthplace, so all areas of the country were represented (though not necessarily evenly represented as there is no limit for number of applicants).

All applicants were examined clinically by the investigator for the presence of inguinal hernia, hypospadias, undescended testis and varicocele, or for scars indicating their repair earlier in life (applicants in whom these conditions were found, i.e. not previously treated, were refused admission to the university).

# Results

The results are shown in Table 1. Of the 3057 applicants, 250 (8.2%) had one of the conditions, either present when examined or repaired earlier in life. Ninety three (3.0%) had inguinal hernia, bilateral in 13 (14.0%) cases; 59 (1.9%) had hypospadias, 48 (81.4%) of them glanular; 15 (0.5%) had undescended testis, bilateral in 4 (26.7%); and 83 (2.7%) had varicocele, only 1 (1.2%) on the right side.

### Discussion

Inguinal hernias and genital abnormalities are common surgical problems in young males. Most can be managed easily, but if neglected, they can cause serious medical, social, psychological and economic problems.

The lifetime risk for developing inguinal hernia in men is 27% [12]. In Turkey, a prevalence of 1.45% was found among 19 750 schoolchildren [13]. In a study done on 1748 male elementary school students in the city of Aqaba in the south of Jordan, inguinal hernia was found in 13.44% [14], which is nearly 4 times the figure found in the present study. The results of this study may be more accurate because the sample was more representative of the Jordanian community as the applicants to the military wing of Mu'ta University come from all parts of Jordan.

In Italy, an incidence of 0.36% was found for hypospadias [15]. In the Netherlands the incidence was 0.38% of live births [16]. In British Colombia, the incidence was 0.444% of live births [17]. In Finland, 0.3%of boys were found to have hypospadias [18]. In Bahrain, prevalence was 0.76 per 1000 live births [19]. In Egypt a prevalence of 0.23% was found among 3000 consecu-

Condition	Total		Right sided		Left sided		Bilateral	
	No.	%	No.	%	No.	%	No.	%
Inguinal hernia	93	3.0	48	51.6	32	34.4	13	14.0
Hypospadias	59	1.9	_	_	_	_	-	-
Undescended testis	15	0.5	2	13.3	9	60.0	4	26.7
Varicocele	83	2.7	1	1.2	82	98.8	0	-

Table 1 Prevalence of inguinal hernia and genital abnormalities in applicants to the military wing of Mu'ta University (N = 3057)

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tive neonates [20]. In Aqaba, a prevalence of 0.74% was found [14]. In the present study, prevalence of hypospadias was 1.9%, so it is clear that this was substantially greater than international findings. This is supported by the high prevalence found in the Aqaba study [14]. More severe forms of hypospadias were not detected in this study. It is likely that a person with severe abnormalities (where the deformity is obvious to the young man himself) would not apply to a military university as he would know that he would not pass the medical examination. This might explain why these forms of hypospadias were not detected.

In the study done in Aqaba in southern Jordan, undescended testis was found in 2.12% of the sample [14]. In the United States of America, prevalence ranged from 3.7% at birth to 1.1% from age 1 year to adulthood [6]. In a comparative study done in Denmark and Finland, prevalence of undescended testis at birth was 9.0% in Denmark and 2.4% in Finland; at 3 months this fell to 1.9% in Denmark and 1.0% in Finland [21]. Internationally, prevalence range is 4.3%-4.9% at birth, 1%-1.5% at 3 months and 0.8%–2.5% at 9 months. [6,7]. In Nigerian children, the prevalence of undescended testis was 0.5% [22]; in Turkey it was 0.9% [13]. In another Turkish study, undescended testis was found in 0.31% of 9078 elementary school students [1]. In Bahrain, prevalence was 0.65 per 1000 live births [19]. From this comparison, it is clear that the prevalence of undescended testis in developing countries, including Jordan in our study, is substantially lower (one quarter to one half) than that in some industrialized countries. This observation needs further investigation and assessment to be documented conclusively. The high prevalence reported in the previous Jordanian study cannot be considered to be representative of Jordan as a whole as it was limited to 1 small city, Aqaba [14].

Varicocele is very rare under the age of 10; this might explain the very low prevalence of varicocele (0.46%) which was found in a study done in Aqaba, Jordan, as the age range of the sample was 6-12years [14]. Some Italian studies showed a much higher prevalence: in a study carried on 9861 students aged 11-18 years, a prevalence of 16% was found [23]. In a second study on 2400 male applicants for the Italian Air Force Academy aged 18–22 years, varicocele was found in 8.16% [24]. In Greece, 3047 schoolboys aged 5-16 years were examined clinically by a urologist for varicocele while standing; left varicocele was present in 3.21% [25]. In Poland 2470 schoolboys aged 10-20 years were examined, varicocele was found in 35% [26]. This showed that prevalence (2.7%) in our sample of young Jordanian men was lower than that in many similar studies.

# Conclusion

Prevalence rates for inguinal hernia and undescended testis were comparable with the range found internationally, while the rate was lower for varicocele and higher for hypospadias.

Conditions such as these, if left untreated or not treated at the proper time, will lead to further complications. Some of these complications will have a negative physical, psychological, social and economic effect on the patient himself, his family and the whole society. For example, in our study those applicants in whom these conditions were found were rejected from the military wing of Mu'ta University (where study is completely free of charge) as they were considered not fit for military service. This

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certainly changed the course of their careers and would have a psychological, social and economic impact on them and their families (and consequently on the community as a whole) compounded with the effect of the medical complications of these conditions. Screening of children through a national birth defects registration system would facilitate prevention and timely treatment of these conditions, and would reduce the medical, psychological, social and economic effects.

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