

# Genital dermatoses in circumcised men: A cross-sectional study from Mashhad, Iran

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**Background:** Knowledge of the frequency and distribution of dermatoses in the male genital area and the effect of circumcision on these two factors are helpful guides to a correct diagnosis. The aim of this study was to determine the prevalence of genital dermatoses in circumcised men.

**Methods:** This cross-sectional study was done on all circumcised men complaining about skin lesions in their genital area.

**Results:** Overall, 355 men with skin lesions in their genital area were enrolled in this study. All of them were circumcised for religious reasons. The mean age of the patients was 31.4±11.5 years. Most skin lesions were seen in the age group 20-29 years (152 cases, 42%). Genital warts were the most common disease (60 cases, 16.9%) followed by dermatitis (38 cases, 10.7%), lichen planus (36 cases, 10.1%), and scabies (36 cases, 10.1%). The most common site for genital lesions was the penile shaft (155 cases, 43.7%). Genital warts were more common on the pubic area, penile shaft, and penoscrotal and peno-pubic junction. We did not observe any cases of balanitis in our study.

**Conclusions:** Genital warts were the most common disease among our cases. Inflammatory dermatoses such as psoriasis and balanitis were less common in our population compared with other studies.

**Keywords:** circumcision, dermatoses, male genitalia

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## INTRODUCTION

A wide range of infectious, neoplastic and inflammatory lesions can affect the male genitalia.

Some of these lesions are specific to the genital area while some are genital manifestations of a general skin disease which usually affects other sites of the body, as well <sup>1</sup>.

Skin lesions in the genital area include congenital abnormalities, trauma, inflammatory dermatoses, pigmentation disorders, infections, benign tumors, precancerous lesions, malignancies, miscellaneous diseases such as lymphedema, and normal variants <sup>2</sup>.

Circumcision may be done for religious, cultural, or medical purposes <sup>3,4</sup>. Approximately one-third of the world's men are circumcised <sup>5</sup>. Religious circumcision is performed by Muslims until the age 13 <sup>6</sup>. Although circumcised boys have a higher incidence of penile-associated problems compared to uncircumcised ones during infancy, the situation will reverse after that time <sup>7,8</sup>. The protective role of circumcision against penile cancer development and sexually transmitted infections, including HIV, has been proven <sup>9,10</sup>. Moreover, circumcision has a protective role against inflammatory dermatoses such as lichen planus, psoriasis, seborrheic dermatitis, and lichen sclerosis <sup>4</sup>.

This study provides an overview of the common diseases of the genital skin, their frequency, and locations of lesions in patients attending a referral dermatology clinic in Mashhad, Iran from 2000 to 2004, which can be helpful for diagnosis and treatment of these diseases.

## PARTICIPANTS AND METHODS

This cross-sectional study was done on the all men complaining of skin lesions in their genital area who were admitted to the Dermatology Clinic of Ghaem Hospital, Mashhad, Iran from 2000 to 2004. All patients with a skin disease in the genital area were enrolled in this study. Patients with urologic problems such as urethritis were excluded.

The patients' characteristics including age, past medical history, and history of suspicious sexual contact, as well as the results of physical examination including the number and location of the lesions, their clinical features, and clinical diagnosis were recorded in specific forms by a dermatologist. A diagnosis was generally made based on clinical findings and examiners' observations although Wood's lamp examination, skin smear, or skin biopsy were used by the dermatologist to confirm the clinical diagnosis in a number of patients. In patients who had two concurrent genital skin diseases, the corresponding data of the diseases were recorded in two separate forms and the frequency of each diagnosis was evaluated separately.

The SPSS (SPSS Inc., Chicago, IL, USA) version 17 software was used to analyze the collected data. In this study, descriptive data were summarized using frequency tables and standard deviation.

## RESULTS

Overall, 355 men with skin complaints in their genital area were investigated. All of them were circumcised. The mean age of the patients was 31.4±11.5 years (range: 4 to 81) years. Most skin lesions were seen in the age group 20-29 years (152 cases, 42%), 30-39 years (90 cases, 25%), and 40-49 years (56 cases, 15%), respectively. The frequency of other age groups was as following: 20 years and less (33 cases, 9%), 50-59 years (14 cases, 3%), 60-69 years (8 cases, 2%), and 70 years and older (2 cases, 0.5%). The distribution of the lesions in different anatomic areas is shown in Table 1. According to Table 1, most skin lesions were seen in the penile shaft with 155 cases (43.7%).

The clinical diagnosis of skin lesions in 355 cases is shown in Table 2. Conditions with less than 1% frequency, including shingles (2 cases, 0.6%), skin tag (3 cases, 0.8%), hemangioma cavernous (1 case, 0.3%), lymphangioma (1 case, 0.3%), intertrigo (2 cases, 0.6%), dermal atrophy (1 case, 0.3%), pityriasis rosea (3 cases, 0.8%), striae (1 case, 0.3%), hidradenitis suppurativa (1 case, 0.3%), genital aphthae (1 case, 0.3%), squamous cell carcinoma (1 case, 0.3%), and iatrogenic ulcer (1 case, 0.3%) are not shown in Table 2. It should be noted that 17 patients (4.8%) had two skin diseases simultaneously.

According to our observations, 4 patients had normal variations of the genital skin who were advised to visit a doctor, including 2 cases with

**Table 1.** Frequency of skin lesions in 355 patients by localization (some patients had more than one localization).

Location	Frequency (%)
Penile shaft	155 (43.7)
Glans penis	110 (31.0)
Scrotum	102 (28.7)
Genitocrural folds	87 (24.5)
Pubis	53 (14.9)
Peno-scrotal and peno-pubic junction	41 (11.5)
Coronal sulcus	30 (8.5)
Distal of penis corresponding to prepuce remnant	16 (4.5)
Perianal area	8 (2.3)
Urinary meatus	2 (0.5)

**Table 2.** Frequency of clinical diagnoses of skin lesions in 355 patients (diseases with frequency more than 1% are shown).

Diagnosis	Frequency (%)
Wart	60 (16.9)
Scabies	36 (10.1)
Lichen planus	36 (10.1)
Dermatophytosis	33 (9.2)
Fixed drug eruption	25 (7.0)
Genital herpes	21 (5.9)
Dermatitis	38 (10.7)
Psoriasis	22 (6.2)
Tinea versicolor	14 (3.9)
Vitiligo	17 (4.8)
Molluscum contagiosum	4 (1.1)
Fissure	10 (2.8)
Angiokeratoma	5 (1.4)
Erythrasma	9 (2.5)
Lichen nitidus	4 (1.1)
Normal variation	4 (1.1)

pearly penile papules and 2 patients with prominent sebaceous glands. The frequency of the disease in each genital anatomic site is shown in Table 3. Two patients had skin lesions in their urinary meatus, and both of them had genital warts.

## DISCUSSION

Cutaneous lesions involving the male genital area consist of a wide range of skin diseases. Careful attention to the disease history, signs and symptoms,

**Table 3.** Frequency of skin diseases in various anatomic sites.

Anatomical region	Diseases	Frequency (%)	N
Glans penis	Scabies	(28.2)	31
	Lichen planus	(22.7)	25
	Fixed drug eruption	(18.2)	20
	Psoriasis	(10.9)	12
	Genital wart	(3.6)	4
	Others	(16.4)	18
	110		
Penile shaft	Genital wart	(33.5)	52
	Scabies	(11.6)	18
	Herpes simplex	(10.3)	16
	Lichen planus	(9.7)	15
	Vitiligo	(6.5)	10
	Fixed drug eruption	(6.5)	10
	Others	(21.9)	34
Scrotum	Scabies	(27.5)	28
	Lichen simplex	(15.7)	16
	Vitiligo	(8.8)	9
	Genital wart	(5.8)	6
	Angiokeratoma	(3.9)	4
	Others	(38.2)	39
102			

**Table 3.** (continued).

Anatomical region	Diseases	Frequency (%)	N
Genitocrural Folds	Dermatophytosis	(27.6)	24
	Pityriasis versicolor	(12.6)	11
	Dermatophytosis and erythrasma	(10.3)	9
	Genital wart	(4.6)	4
	Scabies	(9.2)	8
	Erythrasma	(8.0)	7
	Psoriasis	(4.6)	4
Others	(23.0)	20	
Coronal sulcus	Lichen planus	(46.7)	14
	Genital wart	(13.3)	4
	Scabies	(13.3)	4
	Vitiligo	(6.7)	2
	Fixed drug eruption	(6.7)	2
	Others	(13.3)	4
Distal of penis corresponding to prepuce remnant	Fixed drug eruption	(18.8)	3
	Lichen planus	(18.8)	3
	Scabies	(18.8)	3
	Fissure	(12.5)	2
	Herpes simplex	(6.3)	1
	Wart	(6.3)	1
	Dermatitis	(6.3)	1
	Psoriasis	(6.3)	1
	Cyst	(6.3)	1
16			
Perianal area	Genital wart	(25.0)	2
	Psoriasis	(12.5)	1
	Herpes zoster	(12.5)	1
	Skin tag	(12.5)	1
	Lichen simplex	(37.5)	3
	Others		
Pubis	Genital wart	(45.3)	24
	Pityriasis versicolor	(9.4)	5
	Molluscum contagiosum	(7.5)	4
	Vitiligo	(5.7)	3
	Herpes simplex	(5.7)	3
	Scabies	(5.7)	3
	Contact dermatitis	(3.8)	2
	Psoriasis	(3.8)	2
Others	(13.2)	7	
Penoscrotal and peno-pubic junction	Genital wart	(41.5)	17
	Vitiligo	(14.6)	6
	Fissure	(7.3)	3
	Lichen planus	(7.3)	3
	Atopic dermatitis	(4.9)	2
	Seborrheic dermatitis	(4.9)	2
	Psoriasis	(4.9)	2
Others	(14.6)	6	
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localization of the lesions, normal variations, past medical history, drug history, sexual contacts, etc. and sometimes proper laboratory tests are needed for correct diagnosis of these diseases <sup>2,11,12</sup>.

From 355 patients enrolled in this study, the most common affected age group (42%) was 20-29 years. This finding is similar to the results of a study by Okesola *et al.*<sup>13</sup>. All patients in our study were circumcised for religious reasons. It is estimated that 25% of men are circumcised worldwide<sup>14</sup>.

Genital warts were the most common disease in our population (16.9%). They are considered one of the most common sexually transmitted diseases and have a tendency to appear as a multifocal involvement on the male genital skin<sup>15,16</sup>. Genital warts were responsible for most cases of penile shaft, penoscrotal and penopubis junction, and pubis involvement, considering the fact that all of our cases were circumcised. Cook *et al.* also reported that genital warts were more likely to involve circumcised men than others. Also, this study indicated that genital warts which were detected in uncircumcised men were more commonly seen in the dorsal shaft including the frenulum, glans, and corona<sup>17</sup>. The tendency of the warts to involve the proximal shaft and pubis in our study, in which all subjects were circumcised, confirms these data. Also, this could explain why, despite the high prevalence of warts in our study, it was not the most common disease found in the glans penis and only 4% of those who had lesions in this area suffered from warts.

Other diseases that were more prevalent in our population included dermatitis (10.7%), scabies (10.1%), lichen planus (10.1%), dermatophytosis (9%), fixed drug eruption (7%), psoriasis (6%), genital herpes (5%), and vitiligo (4%).

Psoriasis as an inflammatory dermatosis was less common in our population in comparison with another study<sup>4</sup>. It must be considered that most cases of psoriasis in a study by Mallon *et al.* were diagnosed in uncircumcised men, suggesting that circumcision has protective effects against inflammatory dermatoses, probably due to the presence of the skin in uncircumcised men which can promote inflammation by the Koebner phenomenon. Similar to Mallon *et al.*, we also did not find any cases of lichen sclerosis in our patients<sup>4</sup>.

Balanitis is an inflammation in the glans penis which can involve the prepuce. It is more common in uncircumcised men<sup>18,19</sup>, and is a common cause of visiting genitourinary clinics<sup>11</sup>. We did not have any cases of balanitis in our patients who all were circumcised. Consistent with our results, balanitis

was diagnosed in only 2.3% of circumcised men versus 12.5% of uncircumcised men in a cross-sectional study by Fakjian *et al.*<sup>20</sup>.

Scabies has a great tendency to involve the glans penis and scrotum<sup>21</sup>. In our study, scabies was also the most common diseases involving the glans penis and scrotum.

Penile cancer is a rare malignancy which occurs most commonly in elderly men. The prevalence of penile cancer varies in different populations but the highest rate is seen in some developing countries<sup>22</sup> and predominantly in uncircumcised individuals<sup>23,24</sup>. It is thought that circumcision in childhood is protective against invasive carcinoma of the penis<sup>25</sup>. In our study, SCC of the penis was observed in only one case out of 355 men. The prevalence of penile cancer is very low in the Iranian population (0.15% according to the records of the Iranian Ministry of Health)<sup>26</sup>. This is consistent with the finding of previous studies, suggesting that the cancer prevalence is very low in populations that practice circumcision routinely during their childhood<sup>17,26</sup>.

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