

## Epidemiologic Study of 284 Patients with Urogenital Trauma in Three Trauma Center in Tehran

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### ABSTRACT

**Purpose:** To perform an epidemiologic study of urogenital injuries in traumatic patients who were referred to three traumatic centers in Tehran during one year.

**Materials and Methods:** This study included a part of data of National Trauma Registries, which was performed within one year. Questionnaires were completed by trained staff in three different geographical regions of Tehran: Shohada-e-Tajrish hospital (north of Tehran), Sina hospital (south of Tehran), and Shaheed Faiazbakhsh (west of Tehran).

**Results:** Two hundred and eighty four (5%) out of 57367 patients who were referred to the above mentioned centers had genitourinary trauma, of whom, 145(42%) were hospitalized. Males with a frequency of 92% (258 patients) were the most injured group. Patients mean age was  $25\pm 14$  years, mostly between 20 and 29 years (33.6%) followed by 10-19 years age group with a frequency of 25.6%. Non-penetrating trauma with a frequency of 96% was the most common type and accident was the most mechanism of trauma. One hundred and one patients out of the studied population had associated injuries. The most frequent injuries were occurred in extremities (40%) and the less in head and neck (7%). There were 22 (21.7%) intra-abdominal organ injuries. Sixty nine percent of patients developed mild injury (ISS<7), 20% developed severe injury and (ISS>12), and 4.2% of patients died. The most common injured organ was kidney (3.3%) and the least one was ureter, as no ureteral injury was reported.

**Conclusion:** Although a low percentage of traumatic patients develop urogenital injuries, disregarding these injuries may lead to serious complications and it is recommended to consider these injuries while dealing with such patients. Considering the fact that these complications which could be preventable, are mostly developed in the youth, making solution for such problem is recommended.

**KEY WORDS:** urogenital system trauma, epidemiology, Tehran, injury severity

### Introduction

Trauma is considered as the main reason for mortality in the ages between 1 and 44 years in the United States, and some believe that it is the first reason of mortality for this age group worldwide. The rate of injuries leading to disability is 2.5 times as many as the mortality caused by trauma.<sup>(1)</sup> Urogenital system injuries are seen in 10% of traumatic patients and mostly in patients with multiple trauma and severe trauma of lower parts of abdomen or pelvis. The prevalence of uretrogen-

ital injuries has been reported between 10 and 30% in adults and less than 3% in children.<sup>(1)</sup> Blunt trauma is the cause of more than 90% of such injuries<sup>(2,3)</sup> and damages caused by sports and accidents are among common causes of such injuries. Penetrating trauma caused by knife and gunshot comprises the highest percentage of injuries factors.<sup>(3)</sup>

Renal injury is the most common injury in uretrogenital system. Renal trauma in traumatic patients who were referred to hospital comprises 3% and is detected in 8-10% of patients with

abdominal trauma.<sup>(4)</sup> Ninety percent of renal injuries are due to blunt trauma.

Accidents, falling and being hit are the most frequent of non-penetrating injuries, whereas bullet and stab wounds are the most common cause for penetrating injuries.<sup>(5)</sup>

There is no need for surgical exploration in 80% of blunt trauma; while, penetrating trauma mostly needs surgery.<sup>(5,6)</sup>

Etiologically, most ureteral injuries are caused by penetrating trauma which are mostly resulted from stab wound or gunshot.<sup>(5,6,7)</sup> Bladder injuries are rarely caused by trauma and mostly developed by pelvic fracture. In 5-10% of pelvic fractures, urinary tract injuries are seen.<sup>(8)</sup> Although such traumas are not mostly life threatening, they can lead to sexual dysfunction or urinary tract disorders; surely, the study of these organs has a great importance, when patient's vital signs are unstable.<sup>(2,3)</sup> At the evaluation of patients with multiple traumas, the probability of urogenital injuries should be considered in all cases, so that they could be detected at early stages.<sup>(5)</sup> In this article the frequency of urogenital injuries and their etiologies were studied in three medical centers.

### Materials and Methods

The data of this article are based on the approved National Proposal of Demographic Study and Evaluation of Injury Severity in Traumatic Patients according to ISS (Injury Severity Score) and general success rate of medical measures which were carried out multicenterally at Tehran.

This prospective cross-sectional study was performed at three medical centers: Shohada-e-Tajrish, Sina, and Faiyazbakhsh hospitals in 1996 in accordance with Trauma and Registry of American College of Surgeons (TRACS) and National Trauma Data Bank (NTDB). The reason for choosing these three centers was the pattern of patients referral in Tehran, as patients at the north of Tehran are referred to Shohada-e-Tajrish hospital, at the south are referred to Sina hospital and at the west are referred to Faiyazbakhsh hospital.

Data collection was carried out according to a designed questionnaire form and by trained physicians who filled in the forms of whole referred traumatic patients to the above mentioned centers, 24 hours a day. Direct observation and interview were the method of data collection. The trained physicians became familiar with data collection process during several sections. A total of

57367 patients were referred to these centers within one year, 4497 of whom were hospitalized. Those traumatic patients whose urogenital injury was detected by paraclinical investigations and physical examinations, were enrolled in this study and those whose urogenital injury was not proved definitely, were excluded from the study. Finally, 284(5%) patients with urogenital injury entered the study.

The collected data included demographic characteristics, trauma mechanism, type of injury, severity of injury and associated injuries. These data were collected in a designed data bank and were analysed with SPSS 10.01. t test was used to compare the means of constant quantitative variables and Chi-Square test or Fisher's exact test were used to compare qualitative variables.

### Results

From a total of 57363 traumatic patients who were referred to the above mentioned hospitals, 4497(7%) patients were hospitalized and 52780(93%) were followed outpatiently. Genital injury was seen in 284(5%) patients, 125(44%) of whom were hospitalized, which consisted of 2.8% of the total hospitalized traumatic patients.

Two hundred sixty one (92%) patients were males and 23(8%) were females ( $P < 0.01$ ). Patients mean age was  $25 \pm 14$  years. The highest incidence (33.6%) was seen in 20-29 years age group followed by 25.6% in 10-19 age group and 13.4% in 30-39 age group (fig. 1). The frequency of blunt trauma was 96% and penetrating was 4%.

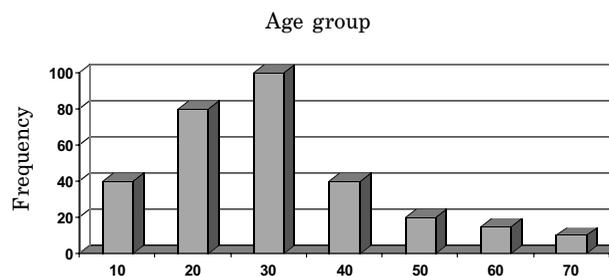


FIG. 1. The distribution of age group in the studied urogenital injured patients

Non-penetrating trauma, the most common mechanism of trauma, was observed in 139 (48.9%) of cases, vehicle accidents in 75(26.5%) the most common of which were passenger accidents (39%), and falling from a high level in 39 (12.9%) (table 1). Of the patients, 43.1% were injured of street and 25.4% at their work. (table 2).

**TABLE 1.** The distribution of frequency of trauma mechanism in the studied patients with urogenital injuries

Trauma mechanism	No.	Percentage
Accident	75	26.5
Falling from high level	36	13.8
Non-penetrating objects	139	48.9
Penetrating objects	10	3.5
Bullet	1	0.4
Others	20	7
Total	284	100

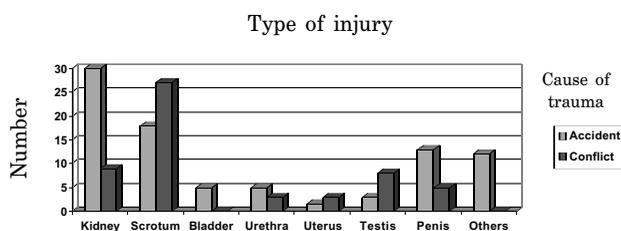
**TABLE 2.** The distribution of place of accident frequency according to the gender of the studied urogenital injured patients

Place of Accident	Gender		Total Frequency (%)
	Male Frequency (%)	Female Frequency (%)	
Home	51(20.1%)	9(40.9%)	60(21.7%)
Street	109(42.9%)	10(45.5%)	119(43.1%)
Place of work	70(27.6%)	---	70(27.6%)
General places	3(1.2%)	---	3(1.2%)
Others	21(8.3%)	5(22.5%)	26(8.7%)
Total	254(100%)	24(100%)	278(100%)

Mean ISS was 7±3.1. Mild injury (ISS<7) was seen in 69%, moderate injury (7<ISS<12) in 11% and sever injury (ISS>12) in 20% of patients.

One hundred and one (35.5%) patients had associated injuries, as well. Extremities injuries were seen in 41(40%) patients, organs and abdominal viscera injuries in 22(21.7%), chest injury in 18(17.8%), vertebral column injury in 13(12.8%) and head injury in 7(6.9%).

The cause of injury was accident in 84(29.6%) patients and conflict and hitting others in 51(81%) (fig. 2). Renal traumas was reported in 94(33%) of patients, scrotal trauma in 91(32%) and urethral trauma in 16(5.6%), 2 of whom developed complete urethral rupture (table 3). Twelve (4.2%) patients died (ISS>R) in whom renal injury was the most common genital injury, reported in 7(40%).



**FIG. 2.** The distribution of Frequency of Urogenital injury according to the cause of accident in the studied traumatic patients

**TABLE 3.** The distribution of urogenital injuries frequency in the studied traumatic patients

Place of injury	Frequency (%)
<b>Renal injury</b>	94(33.1)
- Renal contusion with hematuria	81
- Subcapsular hematoma without laceration	6
- Renal parenchymal laceration	7
<b>Bladder injury</b>	9(3.2)
- Contusion and hematoma	3
- Bladder laceration	6
<b>Scrotum</b>	91(32)
- Contusion, scratching, superficial cutting	89
- Vast rupture	2
<b>Urethra</b>	16(5.6)
- Contusion Superficial injury without extravasation	10
- Superficial rupture with extravasation	2
- Complete rapture of urethra	2
	2
<b>Testis</b>	19(6.7)
<b>Male genital organ</b>	26(9.2)
- Contusion	14
- Superficial laceration	6
- Vast and deep laceration	6
<b>Female genital organ</b>	5(1.8)
<b>Others</b>	24(8.5)
<b>Total</b>	284(100)

## Discussion

According to the obtained results from this study, urogenital injuries develop in a little portion of traumatic patients. This is similar to the findings of other studies. The considering point is that 20-30 years age group was the most common age group was the most common age group included in this study, may be because of trauma pattern which mostly affects the youth, though no difference is seen in the outcome of disease. However, since these injuries may lead to urogenital dysfunction, neglecting them could cause serious sequelae.<sup>(2)</sup>

Regarding gender, males were enrolled 11 times more than females in this study which might be because of socio-cultural condition of the patients, as females mostly spend their time at home.

Statistically, the rate of mortality and temporary disability in the studied patients in different age groups was not statistically different.

Trauma was blunt in 96% of patients which is almost similar to other studies;<sup>(3,4)</sup> moreover, kidney was the most common injured organ. According to the type of trauma in renal and scrotal injuries, there was a significant difference between injured organs and the reason of trauma, injuries were mostly caused by blunt trauma (p<0.05). Moreover, ureteral injuries were the less

common injuries caused by blunt traumas, this was similar to foreign studies results<sup>(5,6)</sup>.

Injury of external genitalia in scrotum had a considerable incidence and there was a significant difference between accident and hitting others according to the reason of trauma ( $p < 0.05$ ). Due to unavailability of gunshot and heavy punishment for illegal use of them, penetrating injury rate is low and gunshot consists of the lowest mechanism of trauma.

Only 20% of patients developed severe injury (ISS>12), low percentage out of whom needed surgical exploration, this finding was similar to the findings of other studies.<sup>(5,6)</sup>

### Conclusion

Although according to the conclusion of our and other studies, urogenital injuries comprise a low percentage of injuries of traumatic patients, disregarding these injuries may lead to serious complications and it is recommended to consider these injuries while dealing with such patients. In regard to the fact that these complications are mostly developed in youth and they could be pre-

ventable, making solution for this problem is recommended.

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