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Original Article

Frequency of genitourinary tract disorders in a tertiary hospital in Isfahan, Iran

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Abstract. For advanced planning related to health issues for hospitalized patients, we aimed to categorize genitourinary tract disorders in a large, representative sample of patients' population in a referral teaching hospital in Isfahan, Iran. In this retrospective study, we enrolled 3721 patients of both genders with a mean age of 45 (ranged from 1 to 93) years old. Clinical and demographical data were recorded in Excel. The statistical analyses processed using SPSS for windows. 79% of total population were males and in the 58% age ranged from 20 to 60 years old that was correlated to employed years of life. In the 78% complications related to genitourinary tract disorders ranked as: urolithiasis (n = 27%), prostate (n = 17%), kidney (n = 14%), testis (n = 11%) and bladder (n = 9%). In the residual 22% of population classified disorders were as: penis, urethral stricture, inguinal hernia, vesicoureteral reflux, urinary incontinence, cystocele, renal colic and adrenal gland. In the 528 patients classified kidney disorders were ranked as: ESRD (51%), unknown kidney disease (38%), malignant neoplasm (7%), and cystic kidney (6%). Testis disorders classified as varicocele (40%), testicular torsion (23%), cryptorchidism (16%), and hydrocele (10%). This study confirmed that among a group of genitourinary tract disorders, the frequency of urolithiasis and prostate were higher than others. The percentage of males with genitourinary tract disorders was higher than females. Among testis disorders varicocele and testicular torsion was high. In the more than of half studied patients' age was related to active and working years of lifetime. Finally as the occurrence of urolithiasis and prostate disorders is increasing in Isfahan, further research in these directions seems to be advantageous.

Keywords: Urolithiasis, prostate, clustering, hyperplasia, genitourinary, malignant, penis

Introduction

According to previous reports, urological disorders account for approximately 830,000 deaths (ranked as 12-Th) and 18,467,000 disability-adjusted life years (ranked as 17-Th) annually. Individuals with chronic kidney disease (CKD) often suffered from cardiovascular or cerebrovascular disease [1, 2]. In developed countries the fourth most common causes of end-stage renal disease (ESRD), reported to be as autosomal dominant polycystic kidney disease, which affects 10 million people worldwide [3]. Stengel B. et al., in 2003 investigated that after diabetes, glomerulonephritis places as the leading reason for ESRD in European countries [4]. A recent study in 2016 recognized 48283 women with episode uncomplicated repeated urinary tract infection (UTI); accounting for a total frequency of 102 per 100000 women, that were highest in women between the ages of 18-34 and 55-64 years old [5]. Bladder infections and catheterization are the most important cause of uncomplicated and complicated UTI respectively [6]. Obstructive or reflux nephropathy is often attributed to urinary schistosomiasis in developing countries as a pattern of UTI [7]. Morton AR. Et al., in 2002 confirmed that kidney stones seem to be a communal struggle in industrial countries [8]. The disease affects all age groups from less than 1 year old to more than 70 [9]. A recent publication in 2016 confirms that over last two decades the prevalence of hyperoxaluria in stone forming patients has been increased. There is may be the existence of geographical display between Asian and Western Countries [10]. In compare to general population, in pediatric patients with unilateral renal agenesis, the prevalence of hypercalciuria and/or hypercitraturia seems to be greater. Similarly the prevalence of urolithiasis in the families of these children is also higher than that in the general population [11]. Related to lower UT symptoms, benign prostatic hypertrophy could lead to obstructive renal failure and ESRD [12] The three variants including PRNCR1, PCAT1, and PCAT2 that are situated within or near a number of prostate cancer- related long noncoding RNAs at the 8q24 area, could specified as multiple risk

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alternatives [13]. Moreover, the study was designed to classify genitourinary tract disorders in order to provide reference data of surgical relevance.

Materials and Methods

Ethical approval

This study was approved by Ethics Committee of Isfahan Kidney Transplantation Research Center (IKTRC) and supported by Isfahan Deputy of Research with the code number of 295126.

Design and Data Collection

A retrospective survey associated to 3721 patients (females; n = 797 and males; n = 2924) was carried out from 2013 to 2015. All patients attended urology ward located at the Alzahra Hospital, conducted to Isfahan Kidney Transplantation Research Center IKTRC. There was no induction in treatment procedure. Demographical data, patients' hospital records' no, the exact date of (admission, discharge, and hospital stay) and the reason for urology ward attending were noted in Excel.

Statistical analysis

All collected data were analyzed by SPSS v. 20 (Chicago, IL, USA). Distribution analysis showed that most of the parameters follow non-Gaussian distribution. Mean, minimum and maximum were calculated for the values of age.

Results

Out of total population (n= 3721) studied 79% were males. As shown in Figure 1, the mean age of patients was 45 years old, which was ranged from 1 to 93 years old. The lowest and highest rate of age belong to the patients with < 20 years old (12%) and patients with 20 to 60 years old (58%) respectively. Studied population related to the age groups of 60 to 93 year old were involved in 30%.

Figure 2 shows that in 78% of patients with genitor-urinary tract complications that ended to surgery treatment were ranked as highest to lowest such as: urolithiasis (n = 992; 27%) > prostate (n = 614; 17%) > kidney (n = 528; 14%) > testis (n = 411;11%) and bladder (n =349; 9%). Analysis of data in 992 patients with stone showed that 69% were males. With the mean age of 44, the minimum and maximum age was from 1 to 88 years old. There were 33 patients under the age of 10 years old as ranged from the age of 1 (n = 5), age 5 (n = 5), age 2 (n = 9) and so on. In these children the location of stones was ranked as; ureter (67%) > kidney (24%) and bladder (9%). In the 959 patients that aged from more than 10 to 93 years old, the location of stones recorded as follow: kidney (50%, plus 1% in pelvis and calyx) > ureter (44%) and bladder 5%.

The frequency of disorders related to prostate was 614 out of 3721 (17%). Figure 3 shows the distribution of age in patients with prostate disorders. With a minimum of 22 and a maximum of 91 year old the mean age of patients with prostate complications' was 65 year old. In 528 patients with the mean age of 43 (ranged from 3-89 year old) due to disorders of kidneys ended to surgery treatment,

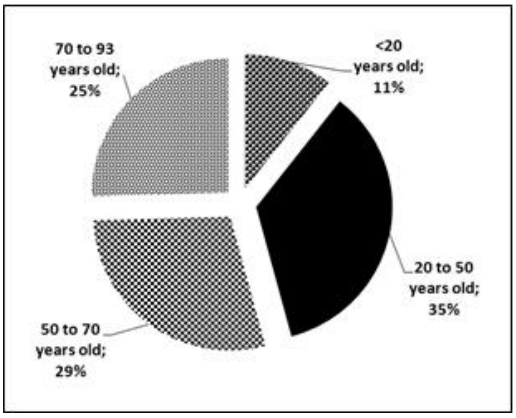

Figure 1. Distribution of age in population studied (n = 3721).

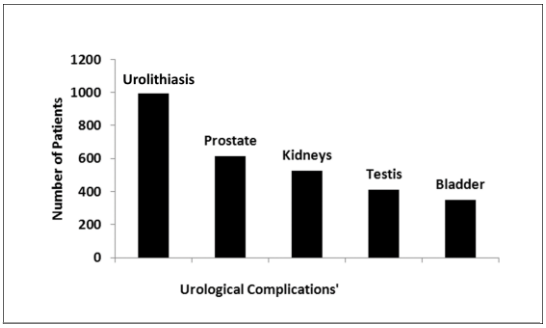

Figure 2. Frequency of urological complications in 78 % of population studied (n = 2894).

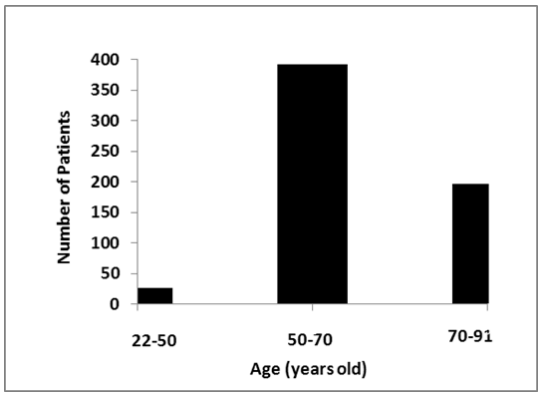

Figure 3. Distribution of age in patients with prostate disorders.

76% were males (Figure 4). The frequency of end stage renal disease (ESRD) or kidney donors was 267 (51%) that was more than 198 that was recorded as unknown kidney disease (38%). Malignant neoplasm of kidneys and cystic kidneys was diagnosed in 36 (7%) and 27 (5%) patients respectively. The mean age of patients with testis disorders was 26.2 years old (ranged from 1 to 83 years old). As shown in figure 5, age related testis disorders in 26 and 59% were between 10 to 20 and 20 to 60 years old respectively.

Figure 6 shows the reason for testis surgery ranked as: varicocele (40%) > testicular torsion (23%) > cryptor-

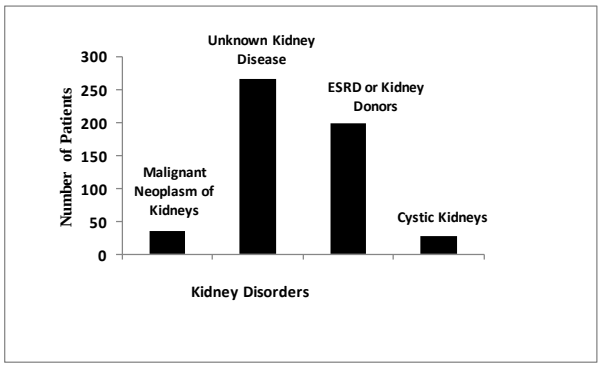

Figure 4. The Distribution of patients with kidney disorders (n = 528).

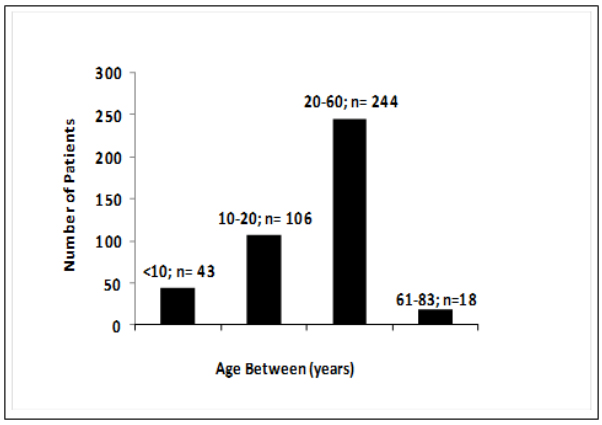

Figure 5. Distribution of age in patients with testis disorders (n = 411).

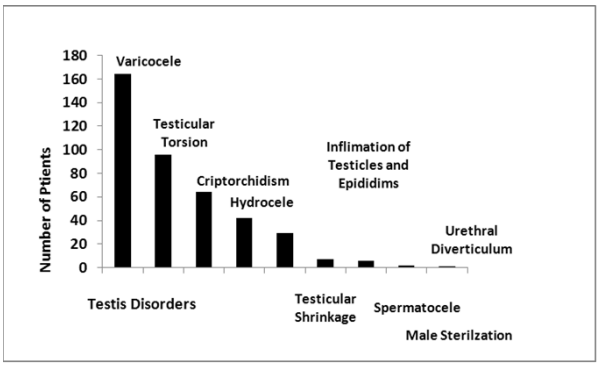

Figure 6. Reasons for surgery related to testis (n = 411).

chidism (16%)> hydrocele (10%)> inflammation of testicles and epididymis (7%) > testicular shrinkage (2%) > male sterilization (1%) > urethral diverticulum (1%).

The mean age related to bladder disorders was 54.8 year old (ranged from 3 - 89 years old). The cause related to bladder disorders in 81 % was not clear. In the remaining population of patients with genitourinary tract complications those treatments ended to surgery could be ranked as: penis > urethral stricture > inguinal hernia > vesicoureteral reflux > urinary incontinence > cystocele > renal colic > adrenal gland).

Discussion

The results of this investigation showed that the highest rate of patients (64%), those needed surgical treatment due to genitourinary tract disorders, belonged to the age group which was associated to employ years of life from 20 to 70 years old. In this study the frequency of calculi was positioned as first place with a value of 27% (n = 3721) in which 69% were males. The incidence of nephrolithiasis is increasing worldwide, particularly in women and with increasing age [14]. About 5% of American women and 12% of men will develop a kidney stone at some time in their life, and prevalence has been rising in both sexes [15].

Previous publication confirmed that nephrolithiasis can have different clinical presentations, ranging from asymptomatic to large obstructing calculi in the upper urinary tract that can severely impair renal function and lead to ESRD [9]. A recent study by Pickard R et al., in 2015 showed that a combination of tamsulosin and nifedipine seem not to be effective in decreasing the need for further treatment to achieve stone clearance in 4 weeks in patients with ureteric colic [16]. Urinary tract stone in our population affected all age groups from 1 to 88 year old. This is in agreement with previous publication by Hussain et al., in 1996 related to the Afro-Asian geo-epidemiological study of stone. They confirmed that the disease affects all age groups from less than 1 year old to more than 70, with a male to female ratio of 2 to 1. They reported also that the prevalence of calculi ranges from 4 to 20 percent [8].

In this study, urinary tract stones in small number of children (n = 33) and adult (n = 959) were noted as ureter (67%), kidney (24%) and kidney (51 %) and ureter (44%) respectively. According to previous report, prostate cancer is the second mainly detected cancer as well as the sixth most cause of death in males with cancer worldwide [17]. The rates of incidence and mortality are also increasing in Asian and European countries.[18] In agreement with previous studies, the attendance of urology ward due to prostate disorders was placed in second order. Regarding to risk factors old age, race, family history and chronic inflammation (benign prostate tissue) seem to be important; as men over the age of 65 are at higher risk for prostate cancer [17-19]. In this study in 96% of population age was more than 50 year old. Regarding to kidney disorders, patients with ESRD have an exceedingly high morbidity and mortality compared to the general population [20]. In this study in the 51 % of patients with disorders of kidneys that ended to surgery treatments, the final recorded cause was mentioned as ESRD. Serrano T, et. Al., in 2013 stated that there is data for a number of associations between rates of four male reproductive disorders such as hypospadias, cryptorchidism, testicular cancer and low sperm concentration at an international scale [21]. In agreement with previous publication, varicocele, testicular torsion and cryptorchidism ranked as the highest causes of testis disorders'. In a minor group of patients disorders of pelvic, penis and other complications were recorded.

According to report published in 2013, in the Unites Stated of America, the incidence of micropenis was

reported as 1.5 in 10 000 male children born between 1997 and 2000. In some turmoil related to penis, a fibrous scar in the tunica albuginea can result in multiple penile deformities. Torsion of the penis is also not uncommon but rarely provokes a complaint. Regarding the pelvic floor disorders' urinary and fecal incontinence and pelvic organ prolapse, it affects population of most women [22-27]. Finally given the burden associated to the Iranian health care system, for a big population of patients with genitourinary tract disorders which treatment ended to surgery, advanced research is recommended for further understanding toward improvement of future surgical management.

Conclusion

The result of this study confirmed that further attempt for an adjustable strategy could have beneficial direction related to pharmacological and surgical care toward patients with prostate disorders. Also further attention toward the study of urolithiasis seems to be important. Finally, the outcome of this research suggests a classification of health scope outcome and economic design by vigilant manipulative tactics (based on: Iranian evidence-problem-solve) in the field of medicine.

Acknowledgement

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Conflict of Interest

The authors declare no conflicts of interest.

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