Sexually Transmitted Infections in Tehran

Maryam Afrakhteh, MD.;[1] Hadi Beyhaghi, MD.;[2] Afshin Moradi, MD.;[3] Seyed Jalil Hosseini, MD.;[4] Atossa Mahdavi, MD.;[5] Sima Giti, MD.;[1] Shahrzad Zadeh Modarres, MD.;[6] Zahra Zonoobi, MD.;[6] Homeyra Masoomi, MD.[3]

1 Department of Obstetrics and Gynecology, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2 Center for Clinical Excellence, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3 Department of Pathology, Shahid Beheshti University of Medical Sciences, Tehran, Iran
4 Urology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
5 Department of Obstetrics and Gynecology. Tehran University of Medical Sciences, Tehran, Iran
6 Department of Obstetrics and Gynecology, Mahdieh Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

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Abstract

Objective: Sexually transmitted infections (STIs) remain a public health problem of major significance in most parts of the world. This study aimed to detect the most prevalent pathogens in patients with signs and symptoms of STI referring to a group of university clinics in Tehran.

Materials and methods: In this cross-sectional study using randomized cluster sampling, 507 consecutive male and female patients presenting with signs and symptoms of STI referring to selected health care centers of Shahid Beheshti University were evaluated between May 2005 and May 2007. Diagnosis was made according to WHO criteria for signs and symptoms of STI in addition to microscopic study of genital discharges.

Results: The most prevalent STI pathogens were Candida, Trichomona, Neisseria gonorrhoeae and Chlamydia with respective frequencies of 53.96%, 18.87%, 4.91% and 22.26% in women and 47.10%, 8.67%, 9.50% and 34.71% in men.

Conclusion: Candida was detected in majority of cases. Chlamydia was the most prevalent STI in both sexes. Simple preventive care has crucial role in decreasing the frequency of STIs in society.

Key words: Sexually transmitted infections, Candida, Trichomonas vaginalis, Neisseria gonorrhea, Chlamydia

Introduction

Sexually transmitted infections (STIs) are among the most common causes of illness in the world and have far-reaching health, economic and social consequences for many countries (1). Failure to diagnose and treat STIs at an early stage may result in serious complications and sequelae, including infertility, fetal wastage, ectopic pregnancy, anogenital cancer and premature death, as well as neonatal and infant infections. Moreover, the individual and national expenditure on STI care can be substantial (2). Sexual and reproductive tract infections other than human immunodeficiency viruses (HIV) are important global

Correspondence:
Maryam Afrakhteh, Department of Obstetrics and Gynecology, Shohadaye Tajrish Hospital, Tajrish Square, Tehran, Iran.
Tel: 98-21-22718001
E-mail: m_afra@sbmu.ac.ir, m_afrakhteh1@yahoo.com

Table1: Diagnostic criteria for identifying STI causative pathogens (1),(7)

Infection	Diagnostic test
Neisseria gonorrhoeae	Cervical purulent discharge, irregular vaginal bleeding, pelvic pain, morning drop for men, finding gram negative *diplococcus* in the smear
Trichomona	Foamy discharge, red and inflamed vaginal mucosa, pain, pruritus, and motile *T. vaginalis* which are usually identified easily in the saline specimen (wet mount)
Candida	Pruritus, vaginal soreness, dyspareunia, external dysuria, and abnormal white vaginal discharge. The yeast or *pseudohyphae* are identified in the KOH specimen or visualized as long, round and oval shaped gram positive organisms on gram staining.
Chlamydia	Cervical erosions with copious muco-purulent discharge, clue cells (epithelial cells with borders obscured by small bacteria), and testing urine or swab specimens collected from the endocervix or vagina in women and testing urethral swab specimen in men.

health priorities (3), particularly Chlamydia and gonorrhea with disease burden like 7 million DALYs (Disability Adjusted Life Years: The sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability) which cause tubal infertility and, potentially fatal, ectopic pregnancy. Candida and bacterial vaginosis, which are the most common reproductive tract infections in women, cause distressing symptoms (4). Women are disproportionately physically affected by all these infections. Signs of infection in women, however, can remain hidden until it is too late to reverse the damage. Furthermore, women are more vulnerable to infection because of gender-based power inequalities (5). Women who manage to overcome these barriers and get diagnosed with a sexually transmitted infection might then be blamed for being the reservoir of infection and face judgment, stigma, and possibly violence from their partners (6). Therefore STI control is of great importance in alleviating these problems. Effective management of STIs is one of the cornerstones of STI control, as it prevents the development of complications and sequelae. Appropriate treatment of STIs at the first contact between patients and health care providers is, therefore, an important public health measure (1). Etiological diagnosis of STIs is difficult for health care providers in many settings. It places constraints on their time and resources, increases costs and reduces access to treatment. In addition, the sensitivity and specificity of commercially available tests can vary significantly, affecting negatively the reliability of laboratory testing for STI diagnosis (7). Considering the unique epidemiology of sexually transmitted infections in each society, it is recommended that countries establish and use national standardized treatment protocols for STIs. To achieve this goal, it is necessary to detect common STI pathogens in our population. This study aimed to determine the prevalence of sexually transmitted infections and their etiologic factors in patients referring to health care centers of Shahid Beheshti University in Tehran.

Materials and methods

This cross-sectional study was conducted between May 2005 and May 2007 on 507 patients in Tehran in selected public health care centers which provide nearly free of charge primary health services for all people. The project was approved by the ethical committee of the Urology Research Center-Shahid Beheshti University of Medical Sciences. Among all health care centers affiliated to Shahid Beheshti University the centers with laboratory facilities were listed and using randomized cluster sampling, five centers were selected. All male and female patients and their spouses with complaints of discharge, pain, pruritus or redness of the external genitalia, pain and irritation in the urinary tract were included in the study and their relevant data were gathered through filling gender specific questionnaires by trained personnel. Informed written consent was taken from all the participants before initiating the interview. The questionnaire contained questions regarding age, sex, living area, marital status, methods of contraception, socioeconomic status (based on average household expenditure per month and level of education), educational level and history of recent foreign trips in addition to major relevant points in their medical history. Considering cultural issues in Iran, patients were visited by same sex physicians. Smears were taken from vaginal discharge and were sent to the laboratory of the same center for microscopic and other bacteriologic studies. Based on predefined diag-

Table2: Demographic characteristics of patients with STI.

	Frequency	Percentage
Gender		
Male	242	47.74
Female	265	52.26
Age		
< 25	216	42.61
26-35	204	40.23
36-45	63	12.43
< 46	24	4.73
Education		
Illiterate	69	13.60
Elementary	130	25.63
Junior high	120	23.69
High	134	26.43
Higher education	54	10.65
Socioeconomic class		
Low	112	22.03
Middle	338	66.73
High	57	11.24
Residential status		
Urban	484	95.37
Rural	23	4.63
Recent foreign trip		
Yes	13	2.49
No	494	97.51

nostic criteria (history, physical exam and laboratory findings) (table 1), patients were divided into four groups (candida, trichomonas, gonorrhea, chlamydia). Although candida is considered as normal flora of vagina, in this study candidiasis was evaluated along with STIs. For better quality control, 10% of all smears were reevaluated by the research team pathologist in an academic center. Data were analyzed via Epi-Info software ver. 3.4.1. Data are presented as mean ±SD or number (%).

Results

Five hundred and seven patients with signs and symptoms of STIs were enrolled in this study. Participants aged 15-45 years with the mean of 28.83 ±7.76 years (table 2). Totally 242 (47.74%) male and 265 (52.26%) female patients were studied and 87.54% of female and 88.42% of male participants were married. Oral Contraceptive Pills (OCP) was the most common method of contraception (37.5%), then withdrawal method (28.9%) and barrier methods (19%). Vasectomy and tubal ligation (TL) constituted less than 2% of contraceptive methods. Ninety five percent of patients were living in urban areas. The majority of patients (66.73%) were categorized as middle socio-economic class. Patients had different educational levels as shown in table 2.

The most prevalent STI pathogens were Candida, Trichomona, Neisseria gonorrhoeae and Chlamydia with respective frequencies of 53.96%, 18.87%, 4.91% and 22.26% in women and 47.10%, 8.67%, 9.50% and 34.71% in men (Table 3).

Discussion

Sexually transmitted infections, by their transmissible nature, affect not only individuals, but their partners as well. Some problems exist regarding promotion of effective medical treatment of STIs. First of all, surveillance is often poor and data on sexually transmitted infections (STIs) in Islamic countries are limited (8). The prevalence, cause, and antimicrobial resistance patterns of sexually transmitted infections, and sexual behaviour indicators are unknown in many settings (9). Secondly, there is uncertainty about the transmissibility, duration of infection, and natural history of many sexually transmitted infections (10). Apparently Iran is not an exception to these general conditions. Although there are considerable number of research articles published on different aspects of STIs in Iran, population based studies that assess the epidemiology of STIs other than HIV/AIDS seem to be very rare (11).

In the present study Candida species were the most frequent pathogenic agent (53.96% of female participants) which is in accordance with international data, as Geiger and Foxman revealed in their study, Vulvovaginal candidiasis is common in adults: 50 percent of young female adults will have had at least one physician-diagnosed episode by age 25 (12, 13), as many as 75 percent of premenopausal women report having had at least one episode (14), and 45 percent of women have two or more episodes. Results of current study are apparently at odds with

Table 3: STI patients based on gender and the pathogenic organism

	Male / N=242	Female / N=265	P-Value
Candida	114 (47.10%)	143 (53.96%)	0.123
Chlamydia	84 (34.71%)	59 (22.26%)	0.002
Trichomonas	21 (8.68%)	50 (18.87%)	0.001
Neisseria gonorrhea	23 (9.50%)	13 (4.91%)	0.044

Shobeiri et al. study, in terms of pathogen prevalence. They reported the presence of 17.2% Candida, 18.1% Trichomona and 28.5% Bacterial Vaginosis among sexually active women in Hamedan city (11). This difference might be due mostly to differences in study population and methods of confirming the diagnosis. It seems that Trichomonas vaginalis infection is more prevalent in our study population (8.67% in women and 18.86% in men) than western countries like United States. Since the overall prevalence of T. vaginalis was 3.1 percent in United States. The annual incidence in the United States has been estimated to be three to five million cases (15). The rate of Gonorrhea in participants of present study among women (4.9%) and men (9.5%) was greater than the rate of Gonorrhea among women (0.12%) and men (0.11%) in the United States (16). The rates of chlamydia are highest in adolescent women (17). In one prospective study of a cohort of 14,322 individuals between the ages of 18 and 26 years, the prevalence of chlamydial infection was 4.2 percent (18). The highest rates were in African American women (14 percent) and overall were higher in women than men. One large study of United States female army military recruits found a chlamydial prevalence of 9 percent with some evidence of regional variation (19). Chlamydia infection was diagnosed in 2.3 percent of 1149 women seen at a university health service in the United States (20), in 16 percent of female adolescents in a middle school clinic (21), and in 5.4 percent in an urban family planning clinic (22). In a study of a sample of households in the United States conducted from 1999 to 2002 as a part of the National Health and Nutrition Examination Survey (NHANES), the prevalence of chlamydia was 2.2 percent in participants ranging in age from 14 to 39 years; this corresponded to 2,291,000 prevalent infections (23). The overall prevalence was similar between men and women. In reports from other parts of the world, the prevalence ranges from 28.5 percent among female sex workers in Dakar (24), to 5.7 percent among pregnant women in Thailand (25), and 0.8 percent overall among women seen in private gynecology practices in Paris and 5.2 percent for those under the age of 21 years (26). Bakhtiari et al. in their study reported 11.6% prevalence of Chlamydia trachomatis in women attending health centers in Babol (27).

In other Middle East countries however, there are considerable variations in prevalence of aforementioned pathogenic agents, in Saudi Arabia the prevalence of trichomoniasis and gonococcal urethritis were 28.1% and 14.2% respectively (28). Evaluation of patients with STIs who attended a government hospitals in the Farwaniya region of Kuwait revealed gonorrhea in 31.5% of patients, nongonococcal urethritis in 23.6% and chlamydia in 4.1% (29). In a cross-sectional study where consecutive symptomatic women presenting to gynecology and family planning clinics from different areas in Jordan were assessed, the prevalence of C. trachomatis infection was 0.6%, that of N. gonorrhoeae was 0.9% and that of T. vaginalis was 0.7% (30). The prevalence of Chlamydia trachomatis among pregnant women attending child and mother health center in Gaza, Palestine was 35(8.3%), and Candida albicans 22(5.2%). The older pregnant women were found to be the highest group infected with C. trachomatis and C. albicans (31).

There are certain limitations in this study; including the acuity of diagnostic facilities, which was tried to be overcome by utilizing a combination of history, physical exam and laboratory findings. Since study sample mostly was consisted of urban population of selected areas in Tehran, the sampling frame is another challenge in the present study and might cause concern regarding the generalizability of the results. Besides, the results are limited since most persons seek STD care from private practitioners while this study was chiefly centered on sexually transmitted disease (STD) patients attending public clinics (8). Also candida as a normal flora of vagina is not always considered as STIs. We hope that the present study could demonstrate the prevalence and the importance of STIs in our society in order to establish a national standardized treatment protocol for our patients.

Candida was the most frequent pathogen detected in present study; it can be conclude that simple preventive measures may have a crucial role in decreesing the frequency of STIs in our society.

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There exists no conflict of interest to declare.

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