

Prevalence of intravenous drug use-associated infections

Sorour Asadi, Majid Marjani

Department of Infectious Disease and Tropical Medicine, Shaheed Beheshti University of Medical Sciences, Iran

ABSTRACT

Background: Intravenous drug use (IDU) is a frequent route of infection transmission, especially during the recent decades. Numerous studies have addressed the increasing frequency of IDU-associated infections such as hepatitis and AIDS. The present study was achieved to determine the prevalence of IDU-associated infections in 3 teaching hospitals in Iran.

Materials and methods: For this descriptive study, 3 teaching hospitals affiliated to Shaheed Beheshti University of Medical Sciences were considered and patients who had been admitted in infectious ward were included. Totally, 126 IDU patients were evaluated for duration of drug abuse, type of drug, site and frequency of injections, and clinical manifestations.

Results: The study population included 123 males and 3 females with a mean age of 37 years. They have averagely abused IV drugs for 5.8 years 3.3 times a day. Groin (44%) and upper extremity (forearm, arm or hand) (36%) were the most common sites of injection. Soft tissue and skin infection, respiratory infections and pulmonary TB, and viral hepatitis were the most common IDU-associated infections.

Conclusion: Skin and soft tissues were the most common site of involvement among IDU patients. High frequency of pulmonary tuberculosis in IDU necessitates clinician's attention; however, the association between TB and HIV was remarkable.

Keywords: *Intravenous drug abuse, Infectious disease, Hepatitis, AIDS.*

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INTRODUCTION

Intravenous drug use (IDU) is a common means of infection transmission and its related complications and therapy are matters of challenge among physicians. The pattern of infectious disease is changing in IDU. Prior investigators have reported falciparum malaria and tetanus as the most common causes in studies performed before 1970;

however, recently these entities have changed completely and hepatitis B and C as well as AIDS are found more commonly (1). Thus, investigating the pattern and means of transmission IDU-associated infections should be kept in mind as health priorities (1,2).

In a study performed in Spain, 17000 infections were evaluated from 1977 till 1991 at 72 hospitals where hepatitis, AIDS, soft tissue infection, endocarditis, tuberculosis and systemic candidiasis were the most common infectious diseases (3).

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Reprint or Correspondence: Majid Marjani, MD.
Department of Infectious Disease and Tropical Medicine,
Shaheed Beheshti University of Medical Sciences.
E-mail: marjani216@hotmail.com

Marantz and his colleagues studied 87 admitted IDUs patients with fever among whom %38 had pneumonia, %26 had mild and self limited infections, and %13 had endocarditis (4).

Official reports have denoted that more than 3,700,000 drug abusers are living in Iran among whom 2,500,000 are addicted (5). Another study revealed that %16.2 of addicted subjects had drug injection while half of them shared needles (6).

Ranjbar et al reviewed 102 admitted IDUs between 1996 and 2002, and reported soft tissue infections, hepatitis and septicemia as the most common entities (7).

The present study was performed to determine the prevalence of IDU-associated infections in 3 different teaching hospitals affiliated to Shaheed Beheshti University of Medical Sciences.

PATIENTS and METHODS

Between May 2002 and January 2004, patients admitted in infectious disease ward of 3 teaching hospitals affiliated to Shaheed Beheshti University of Medical Sciences in Tehran were studied. These hospitals are located in 3 different districts in Tehran, thus, patients with different socioeconomic status were admitted.

Among these, subjects with IDU-associated infections were included for this descriptive study. Totally, 126 cases (4 cases had referred twice) were evaluated and initial data including age, sex, duration of drug abuse, type of drug, site and frequency of injection, clinical manifestations, were gathered by informative forms, interview with patients, and reviewing paraclinical studies. Meanwhile, their disease course and final diagnosis was established. Infections were categorized as follow: skin and soft tissue, bone, cardiovascular, CNS, pulmonary, intraabdominal and hepatitis. Finally, data were analyzed using SPSS software (SPSS Version 10.5, SPSS Inc., USA).

RESULTS

The study population included 123 males and 3 females with a mean age of 37 years (a range, 18-60 years). They have averagely abused IV drugs for 5.8 years (a range, 15 days to 25 years). The vast majority of cases were heroin abusers (96%), among whom %92.1 were using heroin alone while 3.9% used heroin and/or opium.

Groin (44%) and upper extremity (forearm, arm or hand) (36%) were the most common sites of injection. Drugs were averagely injected 3.3 times a day; however, 21 times injection a day was also reported. Totally, 81 patients were imprisoned of whom 26 (32.1%) reported injection or tattoo during their stay in prison. Antibiotic consumption was recorded in 41.3% of the cases while 6.5% had these drugs without the physician prescription.

Fever was by far the most common symptom (%75.8) followed by chills (57.1%). Skin and soft tissue infection (36.3%), abnormal lung sounds (36%) and decreased level of consciousness (19.2%) were common recorded signs.

Patients were hospitalized 14 days averagely (a range, 1-54 days). Finally, 72 patients (%57.1) treated completely, 22(%17.5) died, 10(7.9%) referred to other wards (especially surgery wards) and 22(%17.5) left the hospital.

The most common categories of recognized infectious disease were respectively: 1) soft tissue and skin infection, 2) respiratory infections and pulmonary TB, 3) viral hepatitis. Totally, %5 of patients had AIDS. Table 1 presents categories of infectious disease in our patients. Furthermore, 9 cases of DVT were established with Doppler sonography.

The most common causes of fever were pulmonary infections (%31 of all febrile cases), skin and soft tissue infection (%30) and noninfectious disease (%14). Mortality was occurred more frequently among patients with CNS infections and infective endocarditis. Pulmonary TB was found in 9 patients, all of whom had

productive cough while 7 were febrile. Meanwhile, HIV serology was positive in 4 cases with TB. HIV serology was positive in 20 of 56 tested subjects, all of whom were male and aged averagely 36 years and 7 had AIDS. Duration of IV drug abuse in HIV group was in a range between less than 1 year to 14 years, with a mean of 6 years (%20: less than 1 year, %40: 1-5 years, and %40: >5 years). Pulmonary infections were most commonly found among HIV positive patients (54%).

Table 1. Frequency of infections in 126 admitted IDU patients in infectious wards, 2002-2004

Category	Type	Frequency (%)
Skin & soft tissue	Cellulites	17(13.5)
	Abscesses	21(16.7)
	Infected wounds	3(2.4)
	Necrotizing fasciitis	1(0.8)
	Chicken pox	2(1.6)
Bone	Osteomyelitis	3(2.4)
	Arthritis	5(3.9)
	Bursitis	2(1.6)
Cardio-vascular	Infective endocarditis	5(3.9)
	Infected pseudoaneurysm	3(2.4)
Lung	Pneumonia	20(15.9)
	Pulmonary TB	9(7.1)
	Pleurisy	9(7.1)
	Lung abscess	4(3.2)
Hepatitis	Acute	10(7.9)
	Chronic	4(3.2)
Intra abdominal	liver abscess	1(0.8)
	Splenic abscess	1(0.8)
	Paravertebral abscess	1(0.8)
	Peritonitis	1(0.8)
CNS	Meningitis	2(1.6)
	Brain abscess	1(0.8)
Unknown origin sepsis		5(3.9)

DISCUSSION

In the present study, the mean age of IDU patients was 37 years that is nearly in agreement with Mokri report of 31.4 years (8). We did not investigate the rate of needle sharing among our

patients; however, it could be high since most of our patients had the history of imprisonment where needle sharing is quite common. Mokri denoted %49.8 of IDU patients to share their needles (8). Like Mokri study, most of our subjects used heroin and groin or forearm were the most common sites of injection (8).

In a study conducted in Spain, infection was the cause of admission in %60-80 of IDU patients and entailed 20-30% cases of mortality (3).

Ranjbar and colleagues studied 102 admitted IDU patients in Hamadan during a 6-year period. They reported skin and soft tissue infection (%40.2), hepatitis and septicemia (%23.6) as the most common infections in this group of patients (7). Their findings are similar to ours; however, pulmonary infections were relatively prevalent in our study. Furthermore, we categorized cases as sepsis only if they had indefinite infection origin. On the other hand, Ranjbar et al found more patients to have antibiotics without physician's order (11% vs. 6.5%) (7). More patients were referred to other wards in Ranjbar's study (23.8%); however, their mortality rate was comparable with ours (17.7% vs. 17.5%). In contrast to our study, septicemia and fulminant hepatitis were the most common causes of death, however, we reported CNS infections as the main cause of mortality (7).

Samet et al demonstrated cellulitis and pneumonia as the most common causes of fever (9); however, we reported lung and skin and soft tissue infections. This may be partly explained by our definition of fever. We set 37.2°C for fever; however, if considered temperature greater than 38°C, pulmonary infections would be the most frequent cause.

Seroprevalence of HIV is differed among communities. In Lee study in USA, seroprevalence of HIV varied from %5 (in New Orleans) to %48 (in New York) (10). Mirahmadzadeh et al studied 1061 addicts in retraining centers in Shiraz and reported seroprevalence of %1.2 in IDU, %0.33 in other addicts and %0.76 totally (11). In contrary to

Mirahmadzadeh study, our patients were more frequently infected with HIV (35.7%). It could be explained by the time interval between the study and commencement of drug abuse, as the longer interval could increase the risk of transmission. In addition, we determined the prevalence of HIV in IDU patients admitted to infectious wards.

We found 4 cases with pulmonary TB in HIV positive patients. Jansa et al reported an increased risk of TB among HIV-positive patients as compared with ordinary population (12). Similarly, Selvyn and colleagues found that active TB was more frequent in HIV positive anergic IDU patients (13).

In summary, skin and soft tissues were the most common site of involvement among IDU patients. However, the most common cause of fever was pulmonary infections. High frequency of pulmonary tuberculosis in IDU necessitates clinician's attention. In addition, the association between TB and HIV was remarkable and seeks further attention.

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