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Infection among Hospitalized Injection Drug Users

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The aim of this study was to determine the most prevalent injection complications in injection drug users in Zahedan, Iran. In this cross-sectional study, in a time period of 2 months, from September to November 2005, we evaluated 31 patients who were admitted to infectious ward in Boo-Ali Hospital (Zahedan, Southeast of Iran) during recent five years and had a history of injection drug use. All subjects were examined clinically and according to their physical examination and laboratory results and the history of previous complications like skin abscess, bleeding and mycotic aneurysm, the prevalence of different complications was determined. Obtained data were analyzed using Chi-square and one-way analysis of variance. In this study 25.8% had HIV/AIDS, 22.75% had hepatitis C, 19.3% had hepatitis B, 19.3% had tuberculosis, 9.6% had sepsis. Endocarditis, mycotic aneurysm and skin abscess were less than other infections. Only one case had bacterial pneumonia. HIV/AIDS was the most prevalent infection which accounted for 25.8% of cases. Skin abscess was the most common complication in past medical history (35.4%) but tuberculosis was the most common complication that had led to hospitalization. HIV/AIDS, hepatitis B and C, tuberculosis and skin abscess are common among IDU. However other complications like right side endocarditis, mycotic aneurysm and sepsis are also present, but they have high morbidity and mortality. Thus, the importance of prevention and timely treatment of these complications is necessary.

Key words: Injection drug user, complication, HIV/AIDS, hepatitis B and C, skin abscess, tuberculosis, mycotic aneurysm

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INTRODUCTION

Injecting drug use is associated with many local and systemic complications for the individual and also is associated with the transmission of infectious diseases via needle sharing and sexual activity (Summanen *et al.*, 1995; Baciewicz, 2005). Introduction of rapid increase in injecting drug use is believed to be responsible for dramatic increases in HIV infection in some areas, particularly in developing countries. In some developing countries, injecting drug use is, in fact, the primary risk factor for HIV infection (Anonymous, 1999; Baciewicz, 2005). The mortality rate among addict population is 63 times higher than non-addicted group (Gronbladh *et al.*, 1990). The common cause of mortality in these groups of people is infectious disease. Hepatitis B and C, HIV/AIDS and also tuberculosis are prevalent in IDUs (Abdali and Faiiaz, 2005; Baciewicz, 2005). The incidence of infectious endocarditis (IE) among IDU has been estimated to be 5.3:100.000 person/year (Berlin *et al.*, 1995). Skin abscess is another common problem among IDUs. The prevalence of skin abscess, cellulites or both, has been reported to be 32% among community recruit IDUs in San Francisco (Summanen *et al.*, 1995). Mycotic aneurysms is another sequels of injection drug use. Its prevalence has been reported to be 0.14% in a study in USA (Tsao *et al.*, 2002). Right side infective endocarditis is a important disease in IDUs. In IDUs with IE, remobilization from infected valvular vegetations may cause cerebral infarction, intracranial hemorrhage and the formation of brain abscess (Tunkel and Pradhan, 2002). Considering the multiple potential consequences of injection drug use and also the lack of enough studies in this field in our country, especially in the Southeast of Iran, the aim of this study was to investigate the prevalence of different complications in IDUs of Zahedan city.

MATERIALS AND METHODS

This study was a cross-sectional and retrospective study. We evaluated all 31 injection drug users who were admitted to infectious ward in Boo-Ali Hospital in Southeast of Iran, during recent five years from September 2000 to August 2005. First, all injection drug users identified. Then demographic information, duration of injection drug use, history of different complications such as skin abscess, IE, mycotic aneurysms, bleeding and other complication, before of hospitalization were obtained from their hospital documents by using a questionnaire. Thereafter, final diagnosis for the subjects were recorded and considered the cause of admission. To find out the relationship between these complications

with duration of injection drug use, one-way ANOVA test was used. Preliminary data was analyzed using SPSS (version 10) software. $p < 0.05$ considered statistically significant.

RESULTS

Thirty one hospitalized IDU (30 male, one female; mean age, 35.7 ± 14.7 ; range 16-60 years old) were studied. Demographic characteristics of studied subjects according to their educational status, marital status and occupation are presented in Table 1. IDU was more prevalent in unemployments (45.16%) and there was a significant relation between injection drug use and unemploymentness ($p < 0.05$) also, between IDU and illiterates ($p < 0.001$). Skin abscess was the most prevalent complication in IDUs (35.4%). Significant relationship was also noted between skin abscess and the duration of injection drug use ($p < 0.001$). The relationship between HIV/AIDS and hepatitis with duration of injection drug use were also significant ($p < 0.001$). There was no any relation between other complication and duration of injection ($p > 0.05$). The prevalence of different complication in IDUs, according to their past medical history, during the time of injection drug use are shown in Table 2. The cause of admission in infectious ward, during the recent 5 years are shown in Table 3. Although, we observed co-infection TB with HIV/AIDS and

Table 1: Demographic characteristics of ID Users in Zahedan

	Number	%
Educational degree		
High school graduate	5	16.12
Illiterate	25	80.66
University graduate	1	3.22
Marital status		
Married	6	19.35
Single	20	64.53
Divorcee	5	16.12
Occupation		
Unemployments	14	45.16
Worker	5	16.12
Housekeeper	1	3.22
Driver	4	12.93
Teacher	1	3.22
Student	6	19.35

Table 2: Frequency of Complication in Past medical history according to duration of IDU

No. of complications	Duration of IDU	
	<3 years	>3 years
Skin abscess	4	17
Cellulitis	3	12
Pulmonary TB	0	1
Bleeding	0	2
Mycotic aneurysm	0	1

Table 3: Cause of admission in infectious ward in IDU

	No.	%
Tuberculosis	9	29.03
Hepatitis C	7	22.58
Skin abscess	3	9.67
Infective endocarditis	2	6.45
Mycotic aneurysm	2	6.45
HIV/AIDS; Co-infection	6	19.30
Hepatitis B	4	12.90
Sepsis	2	6.45
Bacterial Pneumonia	1	3.22
Mycotic aneurysm	1	3.22
Co-Infection		No.
Co-infection HIV/AIDS+hepatitis C		3 cases
Co-infection HIV/AIDS+TB		1 cases
Co-infection HIV/AIDS+hepatitis B		2 cases

hepatitis C or co-infection HIV/AIDS with hepatitis C and B, but tuberculosis was the major cause of hospital admission (29.03%).

DISCUSSION

Local problems associated with injecting drug use include abscess, cellulitis, septic thrombophlebitis, local induration, necrotizing fasciitis, gas gangrene, pyomyositis, mycotic aneurysm, compartmental syndromes and foreign bodies (e.g., broken needle parts) in local areas. Systemic problems associated with injecting drug use are HIV infection, hepatitis B or C, pneumonia or lung abscess from septic emboli to the lung, acute and subacute bacterial endocarditis. (Binswanger *et al.*, 2000; Tsao *et al.*, 2002; Abdali and Faiiaz, 2005; Baciewicz, 2005). In present study, different complication of IDU in different age group, ranging from 16 to 60 years old was studied. Present study showed that 88.66% of IDUs were illiterates. In Abdali study in Isfahan, IDU was more prevalent in high school students (44% versus 27%) (Abdali and Faiiaz, 2005). High prevalence of addiction among not so well educated people in present study indicates the importance of education and information in reducing the prevalence of addiction. IDU, in single people was higher in our research than Abdali study (64.53% versus 40.5%). Present results defined that, IDU was high in unemployments group (45.16%) but in Abdali survey, IDU was higher in workers (60.75%). Considering that addiction was more prevalent in illiterates, single and unemployment people in our study, it may lead to many social and familial problems in our community. In patients, skin infection especially skin abscess was the most prevalent complication according to past medical history (35.4%). According to another study, self induced, iatrogenic or accidental trauma, as done by IDUs, resulted in 42% cases of skin abscess and cellulites (Brown *et al.*, 1984). Present results are similar to those reported earlier which showed a 32% prevalence of skin abscess among

a community sample of IDU (Anonymous, 2004). In another study conducted in San Francisco, the likelihood of abscess decreased with increasing duration of injection drug use, which is in contrast with our results. It may be due to drugs that are commonly used in their community (Binswanger *et al.*, 2000). HIV/AIDS was present in 25.8% of our cases. It may be due to the using shared syring in our patients. In a study in Iran, more than half of recognized cases of HIV/AIDS were IDUs (Anonymous, 2004). Also, other study in Sistan and Baluchistan defined that nearly one-half of HIV/AIDS patients were IDUs (Sanei-Moghaddam *et al.*, 2005). Therefore, we can conclude that using shared syring is a risk factor for occurrence of HIV/AIDS infection in IDUs. Present results showed that tuberculosis was the most common cause of hospitalization. In Abdali and Faiiaz, (2005) study hand and foot abscesses were the most common cause for hospitalization and tuberculosis was very rare, because in our province, TB is more prevalent than Isfahan province. Since the annual incidence rate of tuberculosis in this area is 70 per 100,000 (Metanat, 2005), therefore, social and economical status and high prevalence of TB causes to high incidence of tuberculosis in our patients. Among our patients 6 cases had TB (Four cases, pulmonary TB; 2 cases, millitary TB). As the references books, in our patients, among systemic problems associated with injecting drug use, TB, HIV infection and hepatitis C, were more prevalent and also, hepatitis B was a prevalent systemic complication. In Basel, Switzerland, of 404 drug use related admissions, 31% were as a consequence of infection (20% of these infections were as a consequence of viral hepatitis) (Scheidegger and Zimmerli, 1989). In a study in USA, of 200 consecutive admissions over a 5 month period to the medical unit of a hospital, 58% were related to infection, 31% because of acute viral hepatitis and 28% as a consequence of other infections (White, 1973). The other infections that identified in USA study consisted of endocarditis (3.5%), bacteremia without an obvious source (11%), chest infections (29%) and skin infections (43.5%). In Edinburgh study, out of 2000 injection drug users who referred for consultation to accident and emergency department during a 4 month period, 21% were as a consequence of some form of infections. The majority of patients (73%), were referred for local infections, 17% hepatitis and only 10% as a consequence of systemic infection (Groerer and Brodsky, 1992). Mycotic aneurysms was another infection that was seen in our patients but unlike Abdali and Faiiaz (2005) study, it was rare (5% versus 32%). Mycotic aneurysm was led to death in one of our patients because of massive hemorrhage. Infectious Endocarditis (IE) was seen in two cases but it was led to death in one of our

patients because of septic shock. Although, skin abscess was the most common complication in past medical history of our patients (35.4%) but TB was the most common infection that was led to hospitalization (29.03%). Mortality rate was high in complication such as mycotic aneurysm and infectious endocarditis.

CONCLUSIONS

We conclude that in our patients, tuberculosis is the most common complication that leads to hospitalization and skin abscess is the most common infection in IDUs. Increased duration of injection drug use may increase the prevalence of these complications especially skin abscess, hepatitis B and C, HIV/AIDS and occurrence of TB. Considering the high prevalence of complications among IDU, prevention and proper treatment of these complications is necessary. Unemploymentness is a risk factor for addiction. Therefore, role of governments for occupation and employment is very important.

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