Pattern of Pulmonary Infections among Intravenous Drug Abusers

Sorour Asadi, M.Marjani

Department of Infectious Disease, Labbafinejad Hospital, Shaheed Beheshti University of Medical Sciences and Health Services, TEHRAN-IRAN.

ABSTRACT

Background: *Considering the increasing number of intravenous drug users (IDUs) and their frequent admissions to infectious disease wards, better understanding of their infections seems necessary. The purpose of this research was to study the epidemiology, prevalence and nature of pulmonary infections in admitted IDUs in these wards at Shaheed Beheshti University of Medical Sciences.*

Materials and Methods: *A descriptive study was performed on 126 admitted IDUs in infectious wards of the Shaheed Beheshti University of Medical Sciences from May 2002 to Jan. 2004 and we classified their infections.*

Results: *Pulmonary infections were the most common infectious disease category after skin and soft tissue infections. . In 34 of 126 IDUs, pulmonary infection was the definite diagnosis which was investigated in 4 groups: pneumonia, tuberculosis, pleurisy, and lung abscess. Pneumonia was the second most common infection. The most prevalent causes of fever were pulmonary infections. Twenty seven percent (8 cases, 9 admissions) of pulmonary infections were smear positive TB. Frequency of HBS Ag, Anti HCV and HIV infection was 20%, 92% and 67% respectively. Mean duration of admission was 17 days and in average 6 antibiotics were used per patient. Mortality of pulmonary infections was 30% whereas the overall mortality was 17.7%.*

Conclusion: *We found pulmonary infections to be the second most frequent cause of infection in IDUs with a high mortality rate. The high frequency of TB and concurrence with HIV was also noted.**(Tanaffos 2005; 4(16): 47-50)***

Key Words: *Intravenous drug abuse, Infectious disease, Lung infections, Pulmonary infections, Tuberculosis*

INTRODUCTION

In intravenous drug users (IDUs), Infection is the most common cause of death and presents with various nonspecific manifestations. The concurrence of AIDS in these patients aggravates the problem. (1) According to official statistical evidence, there are

Correspondence to: Marjani M

Address: Department of Infectious Disease, Labbafinejad Hospital, TEHRAN, IRAN.

Email address: marjani216@hotmail.com

3700000 drug addicts in Iran (2) and according to a research study in 1998, 16.2% of addicts were intravenous drug abusers (3). Pulmonary infections are one of the most common problems in IDUs but unfortunately there are few such studies in Iran. The aim of our study was to determine the frequency, manifestations and complications of pulmonary infections in hospitalized IDUs.

MATERIALS AND METHODS

A descriptive study was performed on 126 IDUs, admitted to infectious disease wards of Shaheed Beheshti University of Medical Sciences from May 2002 to January 2004. Drug abuse was confirmed by the patients or evidence of frequent injections in unconscious patients. Epidemiologic information, case history and their exam data were recorded, then after admission, the necessary paraclinical studies were performed and the results were recorded. In 34 of 126 IDUs pulmonary infection was the definite diagnosis which was classified in 4 groups: pneumonia, TB, pleurisy, and lung abscess. We defined these groups as follows:

- *Pneumonia*: Diagnosed by combination of CXR and clinical features.
- *Pulmonary TB*: Patients with positive sputum smear or bronchoalveolar lavage (BAL) for acid fast bacilli.
- *Lung abscess*: Diagnosed by CXR or lung CT-scan.
- *Pleurisy*: Pleural effusion or empyema diagnosed by radiological examamination or thoracentesis, with or without lung infiltration.

For analysis of the results, SPSS software version 11.5 was used.

RESULTS

In our study mean age of the patients was 34 years (ranging from 18 to 60). There were three women and the rest were men. Mean duration of their addiction was 5.8 years. Ninety-eight percent were using heroin and 71% of patients were febrile (OT>37.2 °C) at the time of admission, 30% had dyspnea, 25% had cough and 4.8% had hemoptysis. In 36% of patients lung examination was abnormal. Chest x ray was performed in 109 patients which was abnormal in 41 of them (37.6%) and among 22 HIV positive cases, CXR was abnormal in 74% of them.

The most common infectious diseases were as follows respectively:

- Skin and soft tissue infections: 32%
- Pulmonary infections and TB: 30% , and
- Viral hepatitis: 12%.

In HIV positive patients, pulmonary infection was the most common infection (54%). Seven cases of HIV positive patients (5% of all patients) were at the stage of AIDS, three of them had smear positive TB and one had lung abscess. In 9 cases deep vein thrombosis (DVT) was diagnosed with Doppler sonography and in 4 patients DVT was probable.

The most common cause of fever was pulmonary infection (31% of all febrile cases).On the whole, 34 patients had pulmonary infections that were divided in 4 groups: pneumonia, TB, pleurisy and lung abscess; some of them were in two groups simultaneously (Table 1).

Table-1 Frequency of pulmonary infections in 126 admitted IDUs in infectious wards of Shaheed Beheshti University of Medical Sciences 2002-2004.

Infection	Frequency	% of pulmonary infections	% of total
Pneumonia	20	60	18(17.6)
Pulmonary TB	9	27	8
Pleurisy	9	27	8
Lung abscess	4	12	3

Frequencies of pulmonary symptoms in these 34 patients were: cough 74%, dyspnea 73%, sputum 73%, fever 34% and hemoptysis 12%; and 88% of them had abnormal lung examination. CXR was abnormal in all of them. In 11% of the patients with pulmonary infection, blood culture was positive. In 36% of these patients the pathogen was determined.

Frequency of HBS Ag, Anti HCV and HIV infection (Western Blot positive) was 20%, 92% and 67% in the pulmonary infection category respectively and 35.7%, 82.1% and 21.4% in all categories

respectively.

Thirty percent of the patients died due to pulmonary infection, but the mortality rate in all patients was 17.7%. Mean duration of admission was 17 days and each patient with pulmonary infection on average received 6 antibiotics (antibacterial, anti TB, HAART "Highly Active Anti-Retroviral Therapy" and ...) which was higher compared with antibiotics per patient ratio in total (3.9 antibiotics).

Smear positive TB was found in 8 cases (nine admissions), HIV test was performed in 6 of them out of which 4 were positive. One of the TB patients was treated with CAT-II regimen and one died.

Lung abscess was found in 4 patients (2 HIV positive), one of them had brain, lung, and liver abscesses simultaneously; although Candida grew in his sputum and urine but his blood culture was negative. One of the abscess cases was referred for surgery.

Pulmonary effusion was found in 9 patients, 3 with pneumonia, 2 with lung abscess, 2 with TB and 1 with IE. On the whole 3 of the 9 had empyema and one had empyema without lung infiltration.

DISCUSSION

In Marantz and colleagues' study on 75 admitted IDUs with fever more than 38.1 °C, pneumonia was the definite diagnosis in 38% of them and the most common causes of fever were viral syndromes, pharyngitis and febrile reaction in 26%, infectious endocarditis in 13% and other diseases in 23% (4).

In Samet and colleagues' study on 283 IDUs, the first common cause of fever was cellulitis and the second was pneumonia. (5) We found pulmonary infection (31% of all), skin and soft tissue infections (30%) and noninfectious diseases (14%) as the most common causes of fever respectively. We defined fever as OT>37.2 °C. Considering causes of fever in detail, pneumonia and soft tissue abscess with a frequency of 19.3% were the most common and

cellulitis (10.8%) was the second most common cause. If we define fever as OT>38 °C, again pulmonary infections with a frequency of 40.4% were the most common causes of fever.

In 8 patients with 9 admissions we found smear positive TB. Few patients with bad condition received empirical anti TB drugs but we did not consider them as TB cases. MDR-TB is considered to be a great risk to IDUs (1). One of our patients did not respond to CAT-I drugs so we started CAT-II. This patient was HIV negative. We performed HIV test in 6 IDUs with TB and 4 of them were HIV positive (66%). From 20 HIV positive IDUs, 3 of them had smear positive pulmonary TB which was the cause of pulmonary infection in 23% of them. Jansa and colleagues by studying 361 IDUs found that the risk of TB (especially with anergy or positive PPD) is greater than the normal population (6). Selwyn and colleagues found that the risk of active TB was greater in HIV positive anergic or PPD reactive IDUs (7, 8).

CONCLUSION

Intravenous drug abuse is an increasing problem in our society. Our study demonstrated pulmonary infection as the second common infection and the most frequent cause of fever in these patients. Pneumonia was the second infectious disease in IDUs.

The high frequency of TB compared with other pulmonary infections in IDUs (27% in our study) shows the necessity of paying more attention to this subject, especially concurrent HIV and TB in IDUs (four of six TB cases in whom HIV test was performed) prompts us to search for HIV in each patient.

We need to improve our lab and clinical diagnostic procedures to reduce numerous antibiotic therapies in IDUs with pulmonary problems and narrow our antibiotic coverage.

Acknowledgement

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