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PREVALENCE OF INFECTIVE ENDOCARDITIS IN PATIENTS WHO ARE INTRAVENOUS DRUG ABUSERS ADMITTED IN CARDIOLOGY DEPARTMENT

[1]Dr. Adeel Anwar, [2]Dr. Aghosh E Gul Chaudhary, [3]Dr. Ariz E Gul Chaudhary

[1]Tehsil Headquarters Hospital, Gujar Khan

[2]Allama Iqbal Medical College, Lahore

[3]Punjab Medical College, Faisalabad

Abstract:

Objective: *To know infective endocarditis frequency and its echocardiographic, clinical and microbiological status.*

Study Design: *A Retrospective Study.*

Place and Duration: *In the Cardiology Department, Punjab Institute of Cardiology, Lahore for 3 years duration from February 2013 to February 2016. The patients who were drug abusers and suspected of Infective endocarditis were hospitalized and selected for the study.*

Methodology: *The medical records of 323 patients who were addicted to intravenous drug use (IDU) were reviewed and 33 cases that met Duke's diagnostic criteria were selected for this study. Microbiological findings, Clinical findings, co morbidities and echocardiographic data was studied in details. Data obtained from non-IE and IE patients were compared in SPSS chi-square test and using t test.*

Findings: *32 patients with IE were men and with 26.2 mean age. 288 males were Non-IE patients and two females also with an average age of 38.01 years. HIV was positive in 19 of our patients. There were major statistically variations between HIV-negative and Positive patients. Fever and Weight loss were the most common clinical manifestations. The most common organism (24.2%) causing IE is Staphylococcus aureus and most were methicillin resistant staphylococcal coagulase negative (15.1%). In 33.3% of cases Tricuspid valve was involved.*

Conclusion: *Among intravenous drug users (IDU), infectious endocarditis (IE) incidence is greater than those reported in previous studies. IE risk increases with HIV infection. The most common organism is Methicillin-resistant Staphylococcus aureus. The most common cardiac valve involved is Tricuspid.*

Key words: *Injectable drug users, infective endocarditis.*

*** Corresponding author:**

Dr. Adeel Anwar,

Tehsil Headquarters Hospital,

Gujar Khan

QR code

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INTRODUCTION:

The risk of infectious endocarditis (IE) has increased in IDUs. IE contains the presence of infectious and lesional microorganisms on the endocardial surface of the heart. Previously, the most common predisposing cause of IE was rheumatic heart disease, but aortic sclerosis, mitral valve prolapse, prosthetic valve heart disease, bicuspid aortic valve disease and IDU are more commonly seen. IDU can enhance IE ratio with various methods. Drug contains special particle material (eg, talc) that damages the heart valves when intravenously injected. In addition, poor hygiene of the injection (eg, lack of skin cleansing prior to injection), injection of non-sterile equipment and injection of drug contaminated with bacteria can increase blood bacterial loads. In industrialized countries, native valve endocarditis the incidence in societies in new studies is 1.8 to 6.3 per 100 000 persons / year. The ratio between IDUs is estimated to be between 149 and 2011 per 100,000 person-years and may be higher in heart valve disease patients. In IDU, IE has special epidemiological, clinical and etiological features compared to IE in most studies, non-EUUs. This study purpose was to evaluate the IE incidence and its echocardiographic, predisposing factors and microbiological status in the IDU population admitted in teaching hospital.

MATERIALS AND METHODS:

This Retrospective study was held in the Cardiology Department, Punjab Institute of Cardiology, Lahore for 3 years duration from February 2013 to February 2016. IDU patient's medical records were selected for study. The microbiologic, clinical and echocardiographic criteria according to Duke Criteria of 320 patients were collected and identified in this study. Patient's demographic characteristics, predisposing factors, clinical findings, complications related data, study and hospital stay results were taken from their hospital files. The population was divided into 2 groups: one group had 33 patients with endocarditis and the other group had 29 patients without endocarditis. To compare two different ratios Student's t test was used and p Mean age and chi-squared test was used with SPSS 16 <0.05 was considered statistically significant.

RESULTS:

33 total IE cases were selected for the study. The overall relative frequency was calculated to be about 10%. Most of the patients (n = 31, 92.0%) were from urban areas and rest from he rural areas (n = 4).

Table-I: Demographic Characteristics, Habits and Comorbidity in IE and non IE patients.

Variables		*IE N(%)*	*Non IEN(%)*	*P-value*
Sex	Male	32(96.9)	288(99.3)	0.27
	Female	1(3.1)	2(0.7)	
Age	>35 years	13(39.4)	165(60)	
	<35 years	20(60.6)	125(40)	0.04
Habits	Smoking	32(96.9)	288(99.3)	0.27
	Alcohol	18(54.5)	140(48.3)	
Duration of IDU	Sharing in needles	21(63.6)	145(50)	
	>5 years	21(63.6)	90(31.1)	0.09
	<5 years	12(36.4)	200(68.9)	0.0002
Imprisonment		21(63.6)	145(50)	0.09
Co morbidity	HIV	19(57.5)	41(14.1)	<0.0001
	HCV	13(39.3)	90(31.1)	0.21
	HBV	4(12.1)	8(2.8)	0.02
	TB	15(45.5)	44(15.2)	0.0001

As shown in Table 1, the large number of patients were males (n = 33). For example, the patient was significantly smaller (p <0.05) than the average age of 25.99 ± 5.5 years and patients without IE (age 36.4 ± 9.07 years). IDU time period was 6.8 ± 4.5 years in patients with IE and 3.9 ± 4.05 years (p <0.05). At the admission time, the most common complaint was fever in cases of EI with 89.7%, sweating 83.3%, tiredness 86%, respiratory distress and 57.8% cough 66.7% (Table II).

Table-II: Clinical, Echocardiogrphic and Microbiological findings of IE patients.

Variables		*Number*	*Percent*
Clinical	Fever	29	87.9
	Fatigue	21	63.6
	Weight loss	33	100
	Cough	26	78.8
Echocardiography: Tricuspid valve		11	33.3
	Mitral valve	8	24.2
	Other valves	5	15.1
Microbiology: Staphylococcus areus		8	24.2
	Coagulase negative staphylococcus	5	15.1
	Others	1	3.1

As shown in Table II, our cases microbiological findings are given as coagulase negative staphylococcus (15.1%), Staphylococcus aureus and pseudomonas (3.1%) followed most common organism (24.2%). Most of the isolated staphylococci were resistant to methicillin. In 24 cases Echocardiography results were present. Only mitral valve (24.2%) and aortic (15.1%) were observed in 33.3% of the tricuspid valve. More than one valvarin participated in two cases (6.6%). (Table II). In the cases of echocardiography, the plant cover and mass in the valve are the most commonly reported lesions (57.5%). Criteria defined by Durack et al. (Duke Criteria) and are included in this study. Patient's demographic characteristics, predisposing factors, clinical findings, complications related data, study and hospital stay results were taken from their hospital files. In 2 groups the patients were divided: one group had 33 patients with endocarditis and the other group had 29 patients without endocarditis. To compare two different ratios Student's t test was used and p Mean age and chi-squared test was used with SPSS 16 <0.05 was considered statistically significant. Comorbidities such as HBV, HCV and tuberculosis and human immunodeficiency virus are shown in Table I with and without vitamins E. Smoking, alcohol consumption In both groups, the needles / syringes and prison sharing are shown in Table-I.

DISCUSSION:

The IE frequency in our study was 10 percent. The average IE incidence in the general population is 100,000. Although our patients do not really represent the total IDU in the area, we can practically say that the EE frequency is higher than the general population of EE. This finding is consistent with previous studies. Frontra believes that the incidence of IE in the UDI is 100-1000 times greater than in the general population. High incidence may be associated with IDU and needle replacement and repeated injections. Our study has shown that long term ID use increases the risk for IE for those with IDU (6.7 to 4.4 years, p <0.05). Our results are consistent with previous studies10. Frequent injections of illegal drugs due to years of drug addiction have led to increased risk of endothelial damage in patients with IVDU and consequent valvular involvement. This study showed that the most common clinical manifestation is weight loss followed by fever, cough and fatigue. This finding is consistent with previous studies and literature. These confounding variables are not independently related to EI. In fact, chronology of dependence, prolonged opportunistic infections, malnutrition and poverty can affect these findings. In this study, the relationship between HIV infection and IE was statistically significant (p <0.05). In the study of Yousef et al., There was no

significant difference in HIV incidence between HIV positive and HIV negative. Yu and his colleagues have shown that patients with drug AIDS have a high risk of IE. We believe that HIV infection increases IE risk in patients with IDU. In fact, repeated bacterial infections have put patients at increased risk of IDU with the risk of increased valve involvement. On the other hand, HIV-associated cardiac disease may be responsible for valve damage as a result of EI. In this study, less than 50% of IE patients used a tricuspid valve. Frontera et al. And other researchers report that the tricuspid valve exceeds 75% of patients with IDU. Tricuspid valve is present in 86% of patients with IDU. This difference in our results may be due to the fact that our sample size is small, confined to a

teaching hospital, and probably due to a misdiagnosis of a pre-existing valve disease. In this study, although Staphylococcus areus was the most frequently isolated microorganism and methicillin resistant, only 42% of patients had positive blood cultures. Observation of previous studies on this subject shows controversial findings. Yousef et al. Have shown that the vast majority of S. aureus isolates are methicillin-sensitive in patients with IE. Cooper et al. Methicillin-resistant S. aureus has been shown to be a dominant isolated pathogen in patients.

CONCLUSION:

We believe that the cause of drug resistance in our study may depend on unnecessary antibiotic use and self-management in our patients. In the workplace, antibacterial abuse is a chronic and well-known community struggle for those responsible for the creation of local health policies.

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