Original Article

Clinical Profile & Outcome of Infective Endocarditis patients admitted in tertiary care center in eastern part of Nepal

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Abstract

Introduction: Data regarding the pattern and outcome of infective endocarditis from developing countries are sparse and there have been few studies in our part of the world understanding the clinical profile and outcome of patients with infective endocarditis.

Methods: It was a hospital based descriptive retrospective cross-sectional with the objective on clinical profile and outcome of infective endocarditis patients admitted in tertiary care center in eastern part of Nepal. The study included cases admitted in department of internal medicine ward, BPKIHS with diagnosis of infective endocarditis from year 2008 to 2015.

Results: A total of 20 patients were diagnosed as case of infective endocarditis during the period from 2008 to 2015 in department of internal medicine. The median age of study group was 31 years (range 14-56). Male to female ratio was 9:1. Among various risk factors, history of Intravenous drug use was the main risk factor present in 50% of patients, followed by definite rheumatic heart disease in 40 % of study population. Fever, Chills and sweats were main symptom present in all patients ,anemia in 90 %, heart murmur in 80%, anorexia in 45% , myalgia in 35 %, splenomegaly in 15 %, neurological manifestation , clubbing , Roth's s and embolic phenomenon in 5% of patients. The most common valve involved was tricuspid valve, present in 50 % patient, followed by mitral valve in 35% patient and aortic valve in 15% of patients. Anemia was most common laboratory abnormalities present in 90% of the patients followed by leukocytosis in 80 % of patients, microscopic hematuria and disarranged renal function test was present in 40 % of the patients . Blood culture positivity was seen in 30 % of cases and the pathogen isolated was Staphylococcus aureus. Prior antibiotic treatment was received by 40 % of patients. Acute Renal failure was the main complication appeared which was present in 25 % of patients followed by Neurological manifestations in 5 % and peripheral embolic phenomenon was present 5 % of patients.

Conclusion: The spectrum of our infective endocarditis patients differ from those seen in the west in terms of epidemiology, predisposing factors, microbiology, complications, and outcome. Fever, pallor and heart murmur were most common symptoms and acute renal failure was the most common complication. Majority of our patients improve despite having lack of surgical backup. Culture-negative endocarditis continues to have a high prevalence in developing countries like Nepal, largely due to prior antibiotic use before clinical presentation.

Introduction

Infective endocarditis is an inflammation of the inner tissues of the heart, the endocardium. It is caused by infectious agents, or pathogens, which are usually bacterial but other organisms can also be responsible.

Before the age of modern antibiotics it was almost universally fatal[1]. Infective endocarditis (IE) remains a serious cardiac problem despite the availability of improved diagnostic and therapeutic facilities. Studies

from the west have shown remarkable changes in the spectrum of IE[2,3].

The epidemiology, clinical, and microbiologic spectrum of infective endocarditis (IE) is significantly different in the developing countries compared to the western world. These differences can be attributable to multiple factors present in poorer countries including significantly higher incidences of rheumatic heart disease (RHD) and uncorrected congenital heart disease, excessive and improper use of antibiotics, late clinical presentation, and worse outcomes[4,5].

Data regarding the pattern and outcome of infective endocarditis from developing countries are sparse and there have been few studies in our part of world understanding the clinical profile and outcome of patients with infective endocarditis. In light of the changing global trends in endocarditis over the last four decades, further insight into the clinical expression of the disease in developing countries is warranted.

We therefore, undertook this study to determine the clinical characteristics, and microbiological profile and outcome of patients with Infective endocarditis at tertiary care center in eastern part of Nepal.

Methods

A hospital based descriptive retrospective cross-sectional study was done and included all cases admitted in department of internal medicine ward, BPKIHS with diagnosis of infective endocarditis from year 2008 to 2015. Ethical clearance was obtained from the institution ethical committee. Data was collected from the filed cases with diagnosis of infective endocarditis obtained from medical record section from year 2008 to 2015 admitted in department of internal medicine. Appropriate tools and techniques were used to collect data. Information on clinical epidemiological profile, risk factor, involvement of valve and outcome of the patients were collected.Data was entered in Microsoft Excel 2010 and converted into SPSS (statistical package for social science) 17.0 version for statistical analysis. For descriptive statistics, percentage, mean, standard deviation and median, was calculated along with graphical and tabular presentation were made.

Results

A total of 20 patients were diagnosed as case of infective endocarditis during the period of 2008 to 2015 in department of internal medicine. The median age of study group was 31 years (range 14-56) . Male to female ratio was 9:1 . Among various risk factor, history of Intravenous drug use was the main risk factor present in 50% of patient , 40 % patients has definite RHD , history of the RHD in 20 % patients , with history of previous infective endocarditis in 10 % , Age related valve lesion in 5 % and prosthetic valve replacement in 5% of study population. Among patients diagnosed as RHD only 2 patients were receiving penicillin prophylaxis.

Fever, Chills and sweat were main symptom present in all 100% patients followed by anemia in 90 %, heart murmur in 80%, anorexia in 45% , myalgia in 35 % , splenomegaly in 15 %, neurological manifestation in 5%, clubbing in 5 %, Roth's spot in 5 %, embolic phenomenon in 5% of patients. (Table1)

The most common valve involved was tricuspid valve present in 50 % patient, followed by mitral valve in 35% patient and aortic valve in 15% of patients. combined mitral and aortic valve was involved in 10 % of cases and 5 % patients had involvement of mitral , aortic and tricuspid valve

Anemia was most common laboratory abnormalities present in 90% of the patients followed by leukocytosis in 80 % of patients ,microscopic hematuria and disarranged renal function test was present in 40 % of the patients .Blood culture positivity was seen in 30 % of cases and the pathogen isolated was Staphylococcus aureus in all cases . Prior antibiotic treatment was received by 40 % of patients.

Among the total patients 19 patient improved with treatment, one patient was referred to other centre. Acute Renal failure was the main complication which was present in 25 % of patient followed by Neurological manifestations in 5 % and peripheral embolic phenomenon was present 5 % of patients (Table 2)

Table 1. clinical profile and risk factors in the study population .

Patients characteristics	Categories	Number of patients	Percentage
Age group	<30	14	70
	31-45	4	20
	>45	2	10
Gender	Male	18	90
	Female	2	10
Address	Sunsari	11	55
	Morang	4	20
	Jhapa	3	15
	Dhankutta	2	10
Occupation	Laborer	9	45
	Student	7	35
	Farmer	4	20
Risk factor			
IV drug user		10	50
history of RHD		4	20
Diagnosed RHD		8	40
History of infective endocarditis		2	10
Age related valve lesion		1	5
Prosthetic valve		1	5
Clinical Features			
Fever		20	100
Chills and sweat		20	100
Anemia		18	90
Heart murmur		16	80
Anorexia, weight loss, malaise		9	45
Myalgia, arthralgia		6	30
Splenomegaly		3	15
Neurologic manifestation		1	5
Clubbing		1	5
Roth's Spot		1	5
Embolic Phenemenon		1	5

Table- 2   Outcome and Complications in the study population

OUTCOME		FREQUENCY	PERCENTAGE
IMPROVED		19	95
complications	Renal failure	5	40
	Neurological manifestation	1	5
	Embolic phenomenon	1	5
Referred		1	5

Discussion

The Research was descriptive cross-sectional retrospective study which was intended to study regarding demographic profile, risk factor, sign and symptom, laboratory profile and outcome of patients with infective endocarditis admitted in tertiary care center in eastern part of Nepal.The median age of our study is 31 year and majority of patients in IE group, 70%were below 30 years, this is similar to all previous study from India[10]. But this is in contrast to the western studies where majority of patients had presented beyond the fourth decade.This can be due to the fact that RHD continues to be a significant problem in developing world which usually presents at younger age[6]. Among these patients 90% were male and 10%were female. The male to female ratio was 9:1. This ratio is much greater than previous study done at our hospital which was 1.2:1[7]. The younger age and more prevalence in male patients may be due to increase IV drug abuser and problem of RHD in eastern part of Nepal.

According to our study majority of the patient were resident of Sunsari district which comprises 55% of the total patient admitted in ward with the diagnosisof infective endocarditis. Most of the patient from Sunsari were younger age group with history of IV drug abuser .Right sided infective endocarditis were more common then left sided infective endocarditis in eastern part of Nepal. The study revealed right sided IE secondary to intravenous drug abuse has showed an alarming increase in eastern part of Nepal as compared to previous study of 9.1 %.[7]. Rheumatic heart disease was the another common risk factor for left sided infective endocarditis which was present in 40 % of study population. RHD was also one of the commonest underlying heart disease in our study that is similar to other studies from India[8].

Previously it is reported that RHD and congenital heart disease were the most common risk factor and there is left sided endocarditis is more common in developing countries[9] but in our study it is seen that intravenous drug use is the most common risk factor for infective endocarditis and right sided endocarditis are common as there is increasing with use of IV drug abuse in young population eastern part of Nepal.

Regarding clinical features, fever, chills and sweating was present in 100% cases which was similar to previous study[7] which was followed by anemia in 90 % cases and 80% had heart murmur.Forty five percent of cases had anorexia, weight loss, about 30% had myalgia,arthralgia and splenomegaly was found in 23.1% cases . Rest of symptoms like heart murmur, clubbing , Roth's spot and embolic phenomenon comprises 5% equally. While none of the patient had Osler's node, Janeway lesion, murmur, nail hemorrhage and petechial rashes.

The most common valve involved is tricuspid valve present in (n=10) 50 %patient which is quite different from the previous study done in developing countries. The reason is due to the increase in IV drug abuse in eastern part of Nepal. Similarly mitral valve involved seen in (n=7) 35%. Aortic valve involvement was least common (n=3) 15% .There wasone case with prosthetic valve involvement.

In our study, blood culture were positive in 30 % of study population and staph. aureus was isolated as causative organism in all positive cases.This is similar to the previous studies in developing countries, which have reported culture positivity in 21-47% episodes.[10,11,12]

Blood cultures have been reported to be positive in more than 90.0% patients of IE in western series.[13,14]. Prior antibiotic therapy may be the important reason for high culture negativity in our series, since a high proportion of culture negative IE patients had received antibiotic therapy before admission to our hospital.

Recent large western series have reported a change in the microbial spectrum. Staphylococcus *aureus*has been reported as the commonest microorganism with relative decline in streptococcal endocarditis[15]. This is attributable to aging population, rising drug abuse, patients with prosthetic valves and increasing frequency of nosocomial and iatrogenic endocarditis. Similarity to the west studies, Staphylococcus was the commonest isolates 30 % in our studycases which may be due to increase IV drug abuser in eastern part of Nepal.

Ninty five percent of our cases improved and while 5% cases were referred to other centre. The studies

from industrialized countries have shown a consistent improvement in survival of patients with IE over the past four decades. A similar decrease in mortality is also seen in patients from the Indian subcontinent[9].

Acute renal failure, neurological manifestations and embolic phenomenon are the main complication recorded in our study. Among them acute renal failure is the leading complication, which is manifested in 40% cases and neurological manifestation& embolic phenomenon seen in 5% cases equally.

The major limitation of study was that it was an retrospective study where only hospital record were used, less sample size and outcome evaluated only during hospital discharge but no follow up data could be done.

Despite various limitation of the study, the study reflects the general picture of infective endocarditis at a tertiary hospital in a developing country and it shows the differences in predisposing factors, etiological agents, common clinical symptoms and complications and outcome during hospital stay.

Conclusion

The spectrum of our infective endocarditis patients differ from those seen in the west in terms of epidemiology, predisposing factors, microbiology, complications, and outcome.It occurs in relatively younger population with Intra venous drug user and rheumatic heart disease being the commonest underlying risk factors for the infective endocarditis in eastern part on Nepal.Fever, pallor and heart murmur were most common symptoms and acute renal failure was the most common complication. Majority of our patients improved despite having lack of surgical backup. Culture-negative endocarditis continues to have a high prevalence in developing countries like Nepal, largely due to prior antibiotic use before clinical presentation. We believe that multidisciplinary team is needed to improve diagnosis and management of infective endocarditis patients and Prevention of IV drug abuse and RHD plays major role in decreasing infective endocarditis patients.

Conflict of interest: None declared

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