

Clinical Profile, Pacemaker Parameters and Early Outcome of Permanent Pacemaker Implantation in Lumbini Province Nepal

Samir Gautam,¹ Sachin Dhungel,¹ Bishal KC,¹ Majhar Khan,¹ Abhishesh Shakya,¹ Rajesh Panjiyar,¹ Deepanjali Sharma²

¹Department of Cardiology Gautam Buddha Community Heart Hospital, Butwal, Lumbini Province, Nepal, ²Department of Obstetrics and Gynaecology, Universal College of Medical Sciences, Bhairahawa, Rupandehi, Nepal.

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ABSTRACT

Background: Pacemaker implantation was started for the first time in Lumbini province Nepal at Gautam Buddha Community Heart Hospital. The objective of this research is to evaluate clinical parameters and compare with established centers in Nepal.

Methods: Patient and pacemaker parameters noted in proforma after getting consent from the patients. This is simple observational study. Calculation of parameters done using SPSS 17 version.

Results: Total 224 patients were evaluated over the duration of 3 years. Majority (60.3%) were female and 39.7% were male. 51.3% were of age group 65 to 80 years. 21% were above age 80 years, 22.8% were 45 to 65 years and 4.9% were below 45 years. 96.4% were Single chamber and 3.6 % were Dual chamber pacemaker. 97.8% were implanted on left side and 2.2% were implanted on right side. Impedance more than 1000 ohm noted in 3.6%. Threshold more than 1 mV noted in 7.6% and R wave amplitude less than 10 noted in 28.1%. Dislodgement was in 2.6% and Infection in 1.3%. No procedural death.

Conclusion: Single chamber implantation was far more common than dual chamber. Pacemaker parameters were similar at our hospital to other hospitals in Nepal.

Keywords: Burn; flame; swab culture.

INTRODUCTION

The estimated number of patients globally undergoing pacemaker implantation has increased steadily up to an annual implant rate of 1 million devices.¹ There is a continuous growth in the use of pacemakers due to the increasing life expectancy and ageing of populations.²⁻⁷ High-degree atrioventricular block (AVB) and sinus node dysfunction (SND) are the most common indications for permanent pacemaker therapy. Conservatively treated (i.e. non-paced) patients with high degree AVB have notably poorer survival compared with pacemaker-treated patients.⁸⁻¹¹ In contrast, SND follows an unpredictable course, and there is no evidence to show that pacemaker therapy results in improved prognosis.¹²⁻¹⁴ Improving life expectancy is not, however, the only objective of pacemaker therapy. Quality of life is an essential metric for measuring a patient's clinical status and outcome, and provides a holistic picture of clinical treatment effectiveness.¹⁵ Studies have been unanimous in finding improved quality of life in patients receiving pacing therapy.¹⁶⁻²¹ There are studies from central and eastern

Nepal on pacemaker implantation.²²⁻²⁵ With establishment of cath-lab at our hospital regular pacemaker implantation was started for the first time in Lumbini province, Nepal. We wanted to evaluate the patient and pacemaker parameters and compare with previously established centers.

METHOD

This study was conducted at Gautam Buddha Community Heart Hospital, Rupandehi, Lumbini Province, Nepal from January 2021 to September 2023. Patients undergoing pacemaker implantation at our hospital and giving consent for the study were evaluated. Total of 224 patients giving consent were included in study and evaluation. This was prospective observational study. Demographic data and clinical features were recorded. Findings on investigations including electrocardiography and echocardiography recorded in proforma. Pacemaker parameters and in hospital complications also noted in proforma. Observed findings tabulated and percentage calculation done. SPSS 22 software used for calculation and

Correspondence: Dr. Samir Gautam, Department of Cardiologist, Gautam Buddha Community Heart Hospital, Butwal, Rupandehi, Nepal. Email: samirgautam22@gmail.com. Phone: +977-9852047041.

analysis of data.

RESULTS

Out of total 224 patients 135 (60.3%) were female and 89 (39.7%) were male. Most patients were of age group 65 to 80 years (Table 1).

Age (years)	Frequency (%)
<45	11(4.9)
45-65	51(22.8)
65-80	115(51.3)
>80	47(21)

Common indications for pacemaker implantation noted were complete heart block, second degree AV block, sick sinus syndrome and trifascicular block. Single chamber pacemaker implantation was more common than Dual chamber pacemaker implantation (Table 2).

Chamber paced	Frequency (%)
Single	216(96.4)
Dual	8(3.6)

Most of pacemaker implantation done in left side 219 (97.8%) and right side 5 (2.2%). Out of total implantation 220 (98.2%) were new pacemaker implantation and 4 (1.8%) were generator change. Dislodgement of lead and pacemaker pocket infection were commonly encountered complications (Table 3).

Complication	Frequency (%)
Lead dislodgement	6(2.6)
Infection	3(1.3)
Death	0(0)

Pacemaker Parameter	Frequency(%)
Threshold	
Less than 1 V	207(92.4)
1 V and more	17(7.6)
Impedance	
Less than 1000 ohm	216(96.4)
1000 ohm and more	8(3.6)
R wave amplitude	
Less than 10 mV	63(28.1)
10 mV and more	161(71.9)

Majority of patients had threshold less than 1 volt and impedance less than 1000 ohm (Table 4).

DISCUSSION

There were female patients more than male patients in our study which was similar to the study by Monib AK et al²⁵ from eastern Nepal. Two studies from central Nepal by Dhungana M et al²² and Thapa S et al²⁴ found pacemaker implantation more common in male than female. Most common age group was 65 to 80 years in our study. This was similar to other studies.²⁴⁻²⁵ Most common indication in our study was complete heart block which was similar to other studies from Nepal.²²⁻²⁵ In our study most of pacemaker implanted were single chamber pacemaker 96.4%. Similar findings was present in other studies from Nepal 93.3% Dhungana M et al²², 82.3% Thapa S et al²⁴ and 71% Monib AK et al.²⁵ Most of pacemakers were implanted on left side 97.8% in our study. Only 2.2% were implanted on right side. Indication to right side implantation were persistent left superior venacava, left subclavian vein stenosis and inability get left subclavian vein access on left side. In our study 98.2% were new generator implantation and 1.8% were generator change. Major complications we found were lead dislodgement 2.6% and infection 1.3%. There was no procedure related death. Infection 1.4% and lead dislodgement 1% was found in study by Thapa S et al.²⁴ Lead dislodgement was found in 3 patients and infection in 2 patients in study by Monib AK et al²⁵ from eastern Nepal. Pacing threshold was less than 1 volt was found in found in 92.4% and more than 1 volt in 7.6%. Impedance of less than 1000 ohm was found in 96.4% and more than 1000 ohm was found in 3.6%. R wave amplitude more than 10 mV was found in 71.9% and less than 10 mV was found in 28.1%.

CONCLUSION

Pacemaker implantation was more frequently done in female patients and patients with age more than 65 years. Single chamber pacemaker implantation

was more common than dual chamber pacemaker implantation. Clinical profile, complications and pacemaker characteristics were comparable to studies from other centers in Nepal.

Limitations

This study was single center study from Lumbini

province Nepal. Multicenter prospective study will be more representative of Nepalese population. Very few pacemakers were dual chamber pacemakers. This lacks follow up so complications and morbidities of pacemaker implantation data in not available.

Conflict of interest: None

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