

IMPLANTATION OF A PASSIVE FIXATION SINGLE CHAMBER PACEMAKER IN A PATIENT WITH PERSISTENT LEFT SUPERIOR VENA CAVA

Cardiology

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ABSTRACT

Persistent left superior vena cava is a rare disorder which is asymptomatic and hence is usually discovered while performing interventions through left sub clavian vein.

Electrode instability & displacement have been reported in patients who underwent pacemaker Implantation via persistent left superior vena cava. An active-fixation system & sometimes epicardial pacing is necessary to maintain pacing stability.

We report the case of a 60 years old man with a persistent left superior Vena cava who required Permanent Pacemaker Implantation. Passive fixation ventricular lead was successfully inserted and produced good long term pacing & sensing. To best of our knowledge, this is the first reported case of Implantation of a passive fixation single chamber pacemaker via persistent left superior vena cava in North East India.

KEYWORDS

INTRODUCTION

Persistent left superior vena cava (PLSVC) is a rare disorder which is present in 0.1-0.5% of the general population [1-3]. It is the most common disorder of the systemic venous system. PLSVC results when the left anterior cardinal vein fails to obliterate [4]. PLSVC is most frequently found in association with other congenital heart disease and the prevalence goes up to 12.9% [5]. The presence of PLSVC in isolation from other congenital heart disease has no significant implication except for procedural purposes such as right heart catheterization or pacemaker insertion. [6-8]

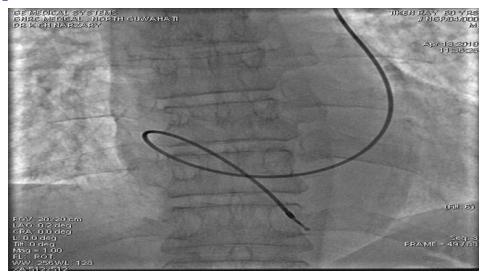
Case Report

A-60 years old male, presented with symptomatic bradycardia. Patient underwent single chamber Permanent pacemaker Implantation (VVI). Left sub-clavian vein was punctured. The guide wire was advanced under fluoroscopic guidance. The course of the guide wire was found to be unusual and found to pass over left cardiac shadow. The presence of a PL SVC was suspected and later confirmed with the advancement of the guide wire into the right atrium through the coronary venous sinus and then to the inferior vena cava. A 5-Fr pacemaker lead was introduced into the Right Ventricle cavity and the lead was placed in right ventricle by passive fixation when acceptable lead parameters were recorded.

Patient was followed up at 6 months and at 14 months which showed stable lead position & normal pacemaker function.



On implantation



After six months



After 14 months.

DISCUSSION

PLSVC is usually asymptomatic and is often an incidental finding during pacemaker Implantation. PLSVC is also associated with arrhythmias and can be a cause of atrial fibrillation [9]. PLSVC can be diagnosed by transthoracic echocardiography, transesophageal echocardiography, contrast venography, computed tomography venography and magnetic resonance venography, but these are not routine prerequisites to pacemaker placement. In pacemaker Implantation, the greatest challenge is crossing the tricuspid valve to place the ventricular lead [10], which may rarely be complicated by dissection or perforation of the thinwalled coronary sinus. In one case report, tricuspid valve was crossed by making a loop of the ventricular lead against the lateral wall of the right atrium and the stylet was made semicircular in shape to facilitate the passage into the right ventricle [11]. PLSVC co-exists with right-sided superior vena cava in 80–90% of the cases[1]. If lead placement cannot be performed satisfactorily, a right subclavian venous approach may be necessary for procedural success via the right superior vena cava.

We used a 5 Fr ventricular pacing lead which was fixed passively. Ideally active fixation of the lead is preferred in PLSVC considering the possibility of lead instability.

CONCLUSION

PLSVC should be suspected whenever a guide wire passes through an unusual course. Ideally active fixation of the lead is preferred in PLSVC considering the possibility of lead instability. Passive fixation ventricular lead can also produce good long term result in terms of lead stability & pacemaker function.

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