Pacing & Electrophysiology

Effect of vacuum suction drainage system placement on clinical outcomes during routine permanent pacemaker implantation

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Background: Achieving adequate hemostasis in blind pacemaker pocket is difficult. Pacemaker site hematoma with its attendant complications is a frequent occurrence (17-25%) after permanent pacemaker Implantation (PPI) especially in patients of ischemic and valvular heart disease on anticoagulation and antiplatelet therapy.

Methods: 84 patients requiring PPI were included in present study. 61 (72%) Patients were male, 23 (27%) patients were females. Clinical presentation was syncope in 35 (41%) patients, complete heart block in 46 (54%), Symptomatic sinus & Functional Bradycardia in 10 cases (5%). 27 (32%) patients had coronary artery disease and were on dual antiplatelet therapy with Ecosprin and Clopidogrel/Prasugrel. Two (2.4%) patients of rheumatic heart disease were on Acitrom. 89% patient received single chamber and 11% patient received dual chamber pacemakers. Permanent Pacemaker was implanted in routine manner in right infracavicular fossa. As a part of protocol MINI VAC closed wound suction drainage system was placed into pacemaker pocket through separate dependent portion of pacemaker site. Injection Targocid, Piptaz were used for two days in therapeutic dosage as per hospital protocol. Patients were discharged after 48 hours after removal of vacuum suction drainage system and wound dressing. Patients were followed for period of three months on regular basis.

Results: There was no incidence of pacemaker site hematoma, local pain or tenderness, infection during hospital stay in all 84 patients. Neither these end points were observed during follow period of three months.

Conclusion: Permanent pacemaker hematoma can be avoided with routine use of vacuum suction drainage system placement during permanent pacemaker implantation. There is no risk of pacemaker pocket infection requiring repeated hospital admissions and risk of explantation.

3D CARTO guided VT ablation in post MI patients
– A single centre experience

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Background: Radiofrequency ablation (RFA) for VT is an established therapy in patients with ICD to reduce the number of shocks. As many of our patients could not afford ICD, we offered RFA as a primary therapy to these patients. We present our experience of RF VT ablation in Indian population.

Methods: Patients who underwent RFA for VT ablation in our centre from January 2008 to May 2013 formed the study group. Patients were categorized as Group I (with ICD) and Group II (without ICD). Time-to-event analysis was performed. The primary end-points studied were VT recurrence and all-cause mortality.

Results: Of 48 patients who underwent procedure, 17 were in Group I and 31 in Group II. Median time-interval between ICD implantation and RFA in Group I was 3yrs (Range: 1-12years). One hundred thirty nine morphologically distinct ventricular tachycardias were induced in the lab with an average of 2.6 VTs per patient. Hemodynamically unstable or nonsustained VTs were 55% and hemodynamically stable and sustained were 45%. Freedom from recurrence of VT was observed in 77% with complete procedural success and 53% of patients with partial success or procedure failure (p = 0.22). The freedom from recurrent VTs was 45% (N = 9) in Group I and 86% (N = 3) in Group II (p = 0.0034) (Fig. 1). Two patients had procedure failure. All cause mortality was 4% (N = 2). There were no arrhythmic deaths.

Conclusion: VT ablation is a safe procedure and can be considered as a primary therapy in patients who cannot afford an ICD. In patients with ICD, early preventive VT ablation at the time of ICD implantation may be better than later curative therapy for recurrent shocks.

The Indian Society of Electrocardiology and the Indian Heart Rhythm Society device survey

Indian Society of Electrocardiology & Indian Heart Rhythm Society, India

Background: There is no data on indications, clinical characteristics of patients and type of cardiac implantable electrical devices (CIED), including pacemakers, intracardiac defibrillators (ICD) and cardiac resynchronization therapy (CRT) in India.

Aim: The CIED survey was conducted to document the type of devices used, indications and capture demographic characteristics, clinical status and co-morbidities of patients undergoing these implants in India.
Method: The CIED was a one-time survey initiated by the Indian Society of Electrocardiology (ISE) and the Indian Heart Rhythm Society (IHERS). The device survey forms were distributed to implanters across many centres in India. A total of 2117 device survey forms from 136 centres were collected from April 2012 to March 2013.

Results: Pacemaker constituted almost 80% of the devices implanted in India. The CIED were more frequently implanted in males (64%) and in the sixth and seventh decade of life (51%). Complete atrio-ventricular (AV) block was the indication of pacemaker implantation in almost 80% of the patients. 54% patients received a single chamber pacemaker. In the ICD group (10%), single chamber ICD was used in 65%; as a primary prophylaxis indication in 52.5% and most often implanted in patients with coronary artery disease (CAD). In the CRT group (10%), CRT-P was used in 57% of these patients, 82% were in NYHA class III or more and the left ventricular ejection fraction (LVEF) < 0.35 in 88% of the patients.

Conclusion: Bradycardia pacemakers are the most common CIED implanted in India with complete AV block being the indication in vast majority. In the ICD group, single chamber device was used in two-thirds of the patients and primary prophylaxis use of ICD was common. CRT-P devices were mainly used in patients with NYHA class III or more and LVEF < 0.35 or less.

Prognosis of drug-induced atrioventricular block

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Background: PM implantation is usually not considered in drug related bradycardia (DRB). However, it is not clear whether AV block is really caused by drugs or it merely exposes an underlying AV conduction disease.

Methods: We prospectively studied 72 consecutive patients (66 ± 12 yrs, 42% women) with DRB (β-blockers, calcium channel blockers and digitalis ) between February 2009 & march 2014. Patients with asymptomatic type II 2:1 AV block, 2:1 AV block, sinus bradycardia < 40/min, AF with average V rate < 40/min or pause > 5 secs were included in the study. Patients were excluded if their AV block was attributed to acute MI, electrolyte imbalances, digitalis toxicity and other antiarrhythmic drugs. Patients were classified into 3 groups:1. DRB resolved after the discontinuation of culprit drug 2.DRB persisted after drug withdrawal or recurred after initial resolution 3.DRB with undetermined correlation: PM implanted and medication continued. The mean follow-up duration was 16 ± 9 months.

Results: The level of AVB was infranodal in 51%, AV-nodal in 37% & undetermined in 12%. Drug discontinuation was followed by resolution of AV block in 57% patients. However, 37% patients with resolution of AVB had recurrence in the absence of culprit drug. Six patients had early recurrence during index hospitalization. In 31% AVB persisted even after the discontinuation of drugs. PM was implanted in all patients with persistent or recurrent AVB despite withdrawal of drug. Two patients with DRB-undetermined relation underwent pacemaker implantation and the medication continued. Thirty five patients with resolution of AV block were discharged & followed up for an average of 16± 9 months. Two patients died and 9 patients had recurrence of AV block in the absence of the culprit drugs.

Conclusions: Half of our patients (54%) with DRB had persistent indication for PM even after withdrawal of AV blockers. Possibly AV blocking drugs merely exposed underlying AV conduction defect.

Ivabradine in AV nodal disease on dual chamber pacemaker

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Background: The use of ivabradine as a rate reducing drug is well documented. In normotensive individuals and those with obstructive airway disease, the use of other rate reducing drugs like beta blockers and calcium channel blockers have limitations. Patients with AV nodal disease can have high atrial rates when they have a dual chamber pacemaker implanted. The high atrial rates are translated into high ventricular rates as the atrium is tracked and ventricle is paced, often at the upper tracking rate which is undesirable for the patient. The study focuses on the novel use of ivabradine in reducing the atrial rate in patients with AV nodal disease on dual chamber pacing.

Methods: During a 2 year period from July 2011 to July 2013, 85 patients with A-V block had dual chamber pacemaker implanted. Within 3 months of implantation 12 patients presented with palpitation. All the patients were on dual chamber rate responsive pacemaker (DDDR). All of them had AV nodal disease—complete AV dissociation in 8 and high degree AV block in 4 patients. On interrogation, all of them had high atrial rate episodes ranging from 90 to 116 beats per minute. Patients were put on ivabradine 5mg twice daily in 8 patients and 7.5mg twice daily in 4 patients.

Results: Out of the 12 patients, 9 were females and 3 were males. 7 patients were diabetics. Obstructive airway disease in 5 and 3 of them were hypertensive. The average incidence of ventricular pacing was 96%. Atrial sensed ventricular pacing (AS-vp) was noted on interrogation in 11/12 patients (91.6%) Atrial paced ventricular sensing (as-vp) in 1 patient. The patients could not tolerate beta blockers or calcium channel blockers. The average ventricular pacing rate before ivabradine was 96/min (82-104-96% CI). The average dose of Ivabradine was 5mg twice a day in 8 patients (66%). In 4 patients the dosage requirement was 7.5mg twice daily (33%). After administration of ivabradine, the average pacing rate reduced significantly in all the patients. The average rate of ventricular pacing was 80/min (76-84-98% CI) (p <0.05) which was significantly less than the pre ivabradine rate.

Conclusion: The administration of ivabradine in patients on dual chamber pacemaker with high atrial rates significantly reduces the atrial rate and reduces the rate of atrial tracked ventricular pacing.

Busting the myth of ventricular dysfunction secondary to dyssynchrony in WPW syndromes

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Background: Ventricular dyssynchrony has been held responsible for impaired LV function in pre-excitation syndromes especially with left sided and posteroseptal accessory pathways (APs) due to