

## **Endocardial VVIR Pacing in Infants and Small Children Weighing $8 \leq \text{Kg}$ : A Single Center Experience.**

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### **Introduction**

VVIR is the most common pacing mode in small children. The overall higher complications rate of epicardial leads has led, in some units especially in critical patients when rapid surgery is not feasible, to the implantation of endocardial systems even in very small infants.

The aim of this work is to review our experience with endocardial pacemaker implantations in infants weighing  $\leq 8$  kg.

### **Patients and Methods**

We reviewed 43 patients (28 males (65.1%) and 15 females (34.9%)) weighing  $\leq 8$  kg who underwent endocardial VVIR pacemaker implantations from January 2008 to May 2015. Clinical evaluation before and after pacemaker implantation was performed, at 8-14 days, 3, and 6 months then every six months. Doppler evaluation of the subclavian vein was performed. Venography of the subclavian vein was done for patients after at least one year of implantation

### **Results:**

The mean age at implantation was  $10.6 \pm 6.7$  months (20 days to 30 months), and the mean weight was  $6.12 \pm 1.7$  (3 to 8) kg. 14 patients weighed  $\leq 5$  Kg. 23 patients had congenital complete heart block (CHB) while 18 patients had postoperative CHB. Two patients had sick sinus syndrome with pauses and seizures.

Two patients had a pacemaker implanted and PDA device closure at the same setting.

At the time of implantation, the mean ventricular pacing threshold was 0.66 V, mean pacing amplitude 1.82 V and mean lead impedance of  $630 \Omega$ . At follow up ( $27.1 \pm 17.6$  months), patients had a mean ventricular pacing threshold was 0.58 V, mean pacing amplitude 1.48 V and mean lead impedance of  $630 \Omega$ .

No complications occurred during implantation. One patient required lead repositioning after 24 hours due to loss of capture and excessive stimulation threshold.

None of the patients had clinical signs or symptoms of vein occlusion, and among the 32 patients who underwent Doppler examination of subclavian vein, none had an alteration of blood flow. Among the 24 patients who had venography done, only one patient showed narrowing of the subclavian vein but without flow obstruction.

### **Conclusions**

Endocardial single chamber permanent pacemaker insertion is feasible in children weighing  $\leq 8$  kg.