Ventricular Arrhythmias Following Autologous Skeletal Myoblast Implantation

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Background: Cellular cardiomyoplasty using autologous skeletal myoblasts (ASM) has been proposed as treatment for congestive heart failure (CHF). Early clinical use of this technique has raised concerns regarding the incidence of ventricular tachyarrhythmias and sudden death. We performed ambulatory monitoring in dogs with CHF after receiving ASM injections.

Methods: 10 dogs underwent injection or coronary artery micropropr ession. After 4 weeks, injections of ASM (200-700 million cells) or saline were delivered by either open-chest epidural injection (EEP) or transcutaneous endovascular (EEP) methods. Multiple 24 hour arrhythmia ECGs (AECG) were recorded at baseline (preinjection) and at weeks 4, 8 and 10 after injection. AECG were reviewed for VUS. Unexpected terminal events were tabulated.

Results: Four groups of dogs were identified: ASM/EP (5), ASM/ENDO (4), saline/EP (3), and saline/ENDO (3). Seven interpretable AECG were evaluated. Occurrences of ventricular tachycardia (VT) or death (D) are below. The majority of events were observed in 6 of 15 dogs. There was no relationship between VT and injection site or radiation per dog.

Conclusion: In this model of myocardial dysfunction and cellular cardiomyoplasty, the injection of ASM did not result in an increase in death or ventricular tachycardia during the monitored periods.

Late Withdrawal of Biventricular Pacing

Background: It has been reported that both biventricular pacing (BVP) and left ventricular pacing (LVP) improve left ventricular systolic function. We evaluated the impact of late withdrawal of BVP on LV function and mitral regurgitation.

Methods: Patients were studied 459±259 days after continuous BVP. Thereafter, the BVP mode was deactivated (OFF) and patients were re-studied after an equilibration period of 72 hours on constant medication. The rate of LV pressure rise (dP/dt) was measured by catheter. The data was similar in patients with sinus rhythm (S) and atrial fibrillation (AF).

Results: In patients with AF, right ventricular pacing (RVP) had negligible contractile effects. However, LVP and BVP raised dP/dt by 25.5±3.1% and 21.4±4.3%, respectively (P<0.01 versus RVP 4.1±3.8%). The data was similar in patients with S (1.4±4.3% vs 21.4±4.3%, BVP 1.7±1.7%). With regard to LV diastolic function, there was no improvement during BVP and LVP, however significant improvement was observed during BVP in patients with AF. BVP improved dp/dt by 19.1±1.5% (P<0.001 versus RVP 6.1±3.2% and LVP 2.6±1.2%), and pressure half time by 20.1±2.9% (P<0.01 versus RVP 7.5±2.7% and LVP 1.2±1.9%). In patients with S, DDD...