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A PROSPECTIVE EVALUATION OF SINGLE AND DUAL CURRENT PATHWAYS FOR TRANSVENOUS CARDIOVERSION IN RAPID VENTRICULAR TACHYCARDIA.

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Single transvenous cardioversion(TC)shocks delivered through two intracardiac catheter electrodes have limited efficacy in rapid(cycle length[CL]<300 ms) ventricular tachycardia(VT). We prospectively examined the efficacy & safety of single TC shocks using dual current pathways(two intracardiac catheter electrodes & a cutaneous patch electrode)& compared it to single TC shocks using one current pathway(two catheter electrodes)in pts with sustained VT. A Medtronic 6880 catheter placed in the RV apex & an R2 skin patch chest wall electrode were used. Single TC shocks(energy range from 2.7 to 25J)were delivered either through the catheter electrodes only(Gp A)or through a common RV apical cathode & two anodes, i.e. the superior vena cava & skin patch electrode(Gp B).

RESULTS: 101 VT episodes(mean VT CL 246±38 ms)were analyzed. The mean VT CL in Gp A & Gp B was comparable(p>.2). Effectiveness of TC shocks for VT termination in either group was related to absolute TC shock energy. The efficacy rate at specific energy levels in the two groups was:

ENERGY	GP A	GP B	p(Gp A vs Gp B)
10 J	35%	47%	>.2
20J	72%	92%	.07

94% of all rapid VT episodes were successfully converted by 25J shocks in Gp B. Mean energy required for successful VT termination with TC for shocks below 10J was higher in Gp A than Gp B(6.2 ± 3.7J vs 3.6 ± 2.0J, p<.05). Analysis of shock current flow in Gp B indicated that 47 to 74% of the total current was transmitted through the RV apical/SVC electrodes & 26 to 53% through the RV apex/R2 electrodes.

CONCLUSIONS: 1)Transvenous shocks employing intracardiac & cutaneous electrodes for bidirectional current flow are safe & effective in rapid VT. 2)This electrode configuration can enhance efficacy & reduce energy requirements for successful cardioversion in specific shock energy ranges. 3)High energy TC shocks are needed to achieve adequate efficacy with the TC technique in rapid VT.

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A comparative study of atrial synchronous versus VVI pacing using both physiological and psychometric assessment.

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In order to compare the effect of physiological pacing (PP) with VVI pacing on the quality of life, 21 patients with heart block were randomly allocated single blind to PP (VAD or DDD) or VVI pacing. The modes were alternated at two weekly intervals for eight weeks. In each period treadmill exercise duration, six minute walking test, symptom analysis and psychometric questionnaires (Health belief model and State-Trait anxiety inventory) were assessed. Results showed no difference in the six minute walked distance ($p > 0.05$) but the treadmill exercise duration was longer in the PP mode ($p < 0.02$). Dyspnoea, fatigue, palpitations and congestion in the neck all occurred less frequently in PP mode. Patients in VVI mode had higher anxiety scores than those with PP (score VVI 34.1, PP 28.5 $p < 0.05$). There was no relationship between anxiety scores and physical symptoms. The more anxious patients in VVI mode had less trust in their doctors, less understanding and confidence in their pacemakers and greater expectation of future cardiac problems. In conclusion, PP results in better exercise tolerance and less symptoms than VVI pacing. PP is also associated with less anxiety but this is mainly due to preconceived health attitudes rather than to relief of symptoms.

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BODY SURFACE MAPS (BSM) AND ENDO-EPICARDIAL MAPS IN THE LOCATION OF VENTRICULAR TACHYCARDIA (VT).

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When VT requires surgery, careful mapping is mandatory as VT morphology is not always indicative of its origin. Purpose of this study was to verify the role of BSM in the location of VT origin by correlating BSM to epi-endocardial earliest activation (EA). Nine pts (8M-1F), aged 47-70 yrs, underwent BSM. Heart potentials were recorded from 105 electrodes on the anterior and 35 on the posterior chest; location of potential minimum at 50 ms corresponded to EA. Preoperative catheter map (7 pts) and intraoperative epi-endo automatic map (9-4 pts) were performed. VT had RBBB+LAD morphology in 3 pts, RBBB+RAD in 3, LBBB+LAD in 2 and LBBB+RAD in 1. The potential minimum was in the left supero-anterior quadrant (Q) of chest in 3 pts, in the right supero-anterior Q in 1, in the inferior Q in 4 and on the dorso in 1. Locations in supero-anterior quadrants corresponded all to an epi EA on the anterior wall of LV and to an endo EA on the anterior or septal wall (3 pts) or in RV apex (1 pt) with good spatial correlation between potential minimum and epi-endo EA; whereas 3 of 4 minimum of the inferior Q and of the dorso were related to posterior paraseptal epi-endo EA, with poor spatial correlation.

Conclusions: BSM may contribute to preoperative location of VT; poor predictive value of inferior or posterior minimum may account for distance from epi-endo EA to recording site; BSM disclose VT with same morphologies and different EA.

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PACEMAKER IMPLANTATION FOLLOWING CARDIAC SURGERY

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Since 1974, fourty six patients were submitted to cardiac pacemaker (PM) implantation during or following cardiac surgery (CC). Twelve had congenital heart disease and 34 had adquired heart disease (orovalvar in 18, ischemic in 14 and cardiomyopathy in 2). PM were implanted due to arrhythmia diagnosed previous to CC in seven, surgical trauma to the conduction tissue in 19 and late onset arrhythmia in 20 patients.

PM implantation technique was transvenous in 24 and transthoracic in 22 patients (in ten concomitantly with CC). The initial mode of stimulation was VVI, except for two patients who received DDD pacemakers. There were no deaths related to PM implant, but in the late postoperative period three patients died with congestive heart failure and one of cardiac arrhythmia (mortality of 8,7). One patient required a DDD pacemaker due to carotid sinus syndrome unresponsive to a VVI pacemaker. Several interventions were required during follow-up, including new CC, new PM reprograming, but the survivors are in satisfactory clinical condition.

PM implantation was an useful contribution to increase the survival of the patients submitted to CC who present cardiac rhythm disturbances. Versatility is expected from the surgeon, as stimulation requirements and anatomic and heamodynamic condition may be peculiar to each patient submitted to CC. Close postoperative follow-up is necessary to obtain the best results.