Ventricular pacemaker upgrade: experience, complications, and recommendations

Sir,—Hildick-Smith and colleagues1 have reported high complication rates after pacemaker upgrade, with 45% of patients suffering one or more complications. We were initially surprised by this rate and were prompted to review the experience of surgically upgrading pacemakers at our hospital, which implants approximately 500 new pacemakers each year.

Between 1983 and December 1997, 74 patients' pacemakers were surgically upgraded from a single chamber (either AAI or VVI) to a dual chamber system. Forty five per cent of the upgrades were performed for pacemaker syndrome or worsening cardiac failure, 16% for atrioventricular (AV) block in patients with AAI pacemakers, 7% for carotid sinus hypersensitivity, 5% for miscellaneous reasons, and 27% were coincident with elective generator replacement. Nine per cent of these patients developed a wound or generator pocket infection requiring antibiotic treatment, 17% suffered a lead displacement or failure, and 15% required their upgrade pacemakers to be explanted (predominantly because of persistent infection or generator erosion). Therefore, 36% of patients suffered one or more complications, which is comparable to the 45% reported by Hildick-Smith et al.

Our patients needing surgical reintervention were younger (58.5 (21.3) vs 71.8 (12.9) years, p = 0.009) but otherwise had the same personal and operator characteristics, and pacemaker generator sizes as those without complications, albeit with a tendency to a lower body mass index. Infection was the predominant predictor of requiring further surgery (odds ratio 16.3, 95% confidence intervals 1.8 to 145.1). Complication rates for patients whose pacemakers were upgraded coincidentally with generator replacement were not significantly different from the remainder of the patient group.

These findings support the conclusion of Hildick-Smith et al that pacemaker upgrade should not be done in the absence of a firm indication. Atrial or dual chamber pacing should be the primary procedure wherever possible, as subsequent upgrade has a high morbidity. Recent prospective evidence strongly supports atrial based pacing in patients with sick sinus syndrome,2,3 if not in those with AV block. We await the results of further trials in patients with AV block,4 but it is clear that pacemaker upgrade should be avoided where possible, and certainly should not be performed opportunistically in the asymptomatic or uncomplaining patient. The onus is to select the correct pacing mode in the first instance.

G M GRIFFIN
J M MCCOMB
R S BEXTON
The Cardiothoracic Centre, Freeman Hospital, Newcastle upon Tyne NE7 7DN, UK

Subcortical implantation of a cardioverter defibrillator under local anaesthesia

Sir,—In a recent issue, Lipscomb et al reported on the implantation of cardioverter defibrillators (ICD) under sedation and local anaesthesia. In July 1997 we also began implantation of ICDs under local anaesthesia, in conjunction with intravenous sedation using non-anaesthetic agents, in response to logistical problems in obtaining general anaesthetics coupled with the development of smaller devices. We have prospectively collected data on 34 consecutive implantations—28 men and six women (mean age 61, range 30–76) with mean left ventricular ejection fraction of 32% (range 15–70) of whom 29 had ischaemic heart disease. The presenting arrhythmia was ventricular fibrillation (VF) in seven, sustained ventricular tachycardia (VT) in 26, and non-sustained VT in one patient.

Like those of Lipscomb et al all procedures were performed in the catheter laboratory. Oxygen via nasal prongs was given routinely and monitored by pulse oximetry, two patients with poor perfusion were additionally monitored with arterial lines. Subcutaneous 1% lignocaine was administered in the usual fashion. However, our technique differed from that of Lipscomb et al in terms of the analgesia and sedation, lead insertion, and device testing, seemingly without detriment to the safety and acceptability of the procedure. Diazepam 5–15 mg (mean 9.2) was given at the start of the procedure with additional aliquots during subcortical pouch formation and defibrillation threshold testing as required (mean 3.8 mg). Before fashioning the subcortical pouch, intravenous pethidine 25 mg was given in one case, and an additional 25 mg was required in seven cases. Lipscomb et al commented on the importance of performing a subclavian puncture in the subcortical tissue plane to avoid mechanical lead fracture; we have performed lead insertion in the more conventional fashion with elective cephalic vein cannulation if possible (23 patients) as with all of our previous implantations under general anaesthesia. Finally, we consider discomfort to the patient we have avoided the use of low energy shocks to determine high voltage lead impedance before defibrillator threshold testing was performed in all cases rather than T wave sensing.

Notwithstanding these differences in technique, our experience confirms the previous findings of excellent safety and tolerability. No significant complications occurred periprocedurally or at follow up. Patients tolerated the procedures well and 18 were discharged home the following day (mean hospital stay 2.2 days, range 1–10). We believe that by implanting the defibrillators under local anaesthesia and intravenous sedation we have considerably improved efficiency of implantation and reduced hospital stay; patients no longer need to wait for general anaesthesia availability but can be scheduled during a routine cardiac laboratory list. We wholeheartedly endorse the conclusions of Lipscomb et al that subcortical ICD placement may be performed safely and tolerably under local anaesthesia and sedation in the cardiac catheter laboratory.

J W SAYERS
F LORGAT
W WALLIS
A F NATHAN
St Bartholomew’s Hospital, London E1 7BE, UK