When to Use Calcium Channel Blockers

1. When do you choose calcium channel blockers for different clinical scenarios? Please differentiate between non-dihydropyridines and other classes.

Question submitted by: Dr. Keith M, Laycock, British Columbia

Calcium channel blockers are indicated for angina, hypertension and supraventricular arrhythmias. Unlabelled uses include Raynaud's phenomenon, migraine and some types of diarrhea. All are peripheral vasodilators. For a given degree of vasodilation, the dihydropyridines (nifedipine, felodipine and amlodipine) have a lesser effect on cardiac conduction tissue. This makes them less useful in atrial fibrillation. The non-dihydropyridines (diltiazem and verapamil) tend to reduce the heart rate. In general, the "'pines" are better antihypertensives agents while the "non-'pines" are better for angina.

Answered by:
Dr. Thomas W. Wilson

Electrocautery Use and Implantable Pacemaker Devices

2. Are precautions regarding the use of electrocautery for skin surgery necessary in patients with implantable pacemaker devices?

Question submitted by: Dominique Hanna, Sherbrooke, Québec

Electromagnetic interference (EMI) produced during noncardiac surgical and endoscopic procedures pose a potential risk of damage to implanted pacemaker or internal cardioverter defibrillator (ICD) systems, particularly when electrocautery is performed in close proximity to the devices. Early reports have documented various responses of implanted devices to periprocedural EMIs, such as inappropriate reprogramming, failure to pace, and even complete system malfunction, resulting in current guidelins that all systems be evaluated before and after any invasive procedure. However, these reports were based on experiences with early generation devices. Significant improvements have since been made in lead and generator design, materials used for EMI insulation, and device noise detection algorithms. While rare occasions of inappropriate sensing by devices can be seen in situations where the application of unipolar electrocautery occurs in close proximity of the pacemaker generator (*ie*., within 8 cm), EMI-associated system failures occurring with contemporary pacing systems are thankfully, uncommon.

Resources:
1. ACC/AHA. Guideline Update on Perioperative Cardiovascular Evaluation for Noncardiac surgery. JACC Mar. 2002.
2. Irnich W, De Bakker JM, Bisping HJ. Electromagnetic Interference in Implantable Pacemakers. Pacing Clin Electrophysiol 1978; 1:52–61.
3. Cheng A. Effects of Surgical and Endoscopic Electrocautery on Modern-day Permanent Pacemaker and Implantable Cardioverter-defibrillator Systems. Pacing Clin Electrophysiol. 2008 Mar;31(3):344-50.

Answered by:
Dr. Brett Heilbron