



Ivabradine: Novel If Channel Inhibitor

Pacemaker activity of the heart involves interplay between several ionic currents that influence spontaneous diastolic depolarization of the sinoatrial node, including I_f current. The search for pure heart rate-lowering agents to prevent angina without over all adverse effects of β -blockers^[1] began more than three decades ago. The discovery of I_f current and I_f channels offered a possible approach to the developing pure heart rate-lowering agents.^[1]

Ivabradine is a selective I_f channel blocker drug which can be used in the treatment of angina. Ivabradine causes bradycardia without any negative inotropic effects. It causes an immediate increase in coronary blood flow due to an increase in the diastolic time interval during which blood flows to the myocardium. Ivabradine reduces myocardial oxygen demand, improves exercise capacity and preserves ventricular contractility. Further Ivabradine does not change any major electrophysiological parameters unrelated to heart rate. 'Pure' heart-rate lowering via I_f inhibition effectively prevents angina with acceptable tolerability.^[1]

Ivabradine effectively prevents angina and concomitantly reduces ischemia. Ivabradine 5 mg and 7.5 mg twice daily (bid) are the licensed dosages for the treatment of stable angina.^[1,2]

About 14.5% of all patients taking the drug experience 'luminous phenomena' (sensations of enhanced brightness in a fully maintained visual field). This is probably due

to blockage of I_h ion channels in the retina which are very similar to cardiac I_f . These symptoms are mild, transient and fully reversible. Bradycardia occurs in two per cent of the patients. Headaches, AV block, ventricular extrasystoles and dizziness are also associated with the use of Ivabradine.^[1]

Ivabradine is contraindicated in severe bradycardia, moderate to severe heart failure, severe hypotension, second and third degree heart blocks. Its use is not recommended in cardiac arrhythmias that interfere with sinus node function.^[1]

Ivabradine is indicated for chronic stable angina in sinus rhythm patients who have a contraindication or intolerance to beta blockers and a high resting heart rate.^[2,3]

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