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Brain Natriuretic Peptide (Nesiritide) in the Treatment of Heart Failure

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ABSTRACT

Over the last decade brain natriuretic peptide (BNP) emerged as a cardiac hormone of clinical interest in diagnosis, prognosis and treatment of patients with Heart Failure (HF). The diagnostic potential of BNP is now well established both in patients with suspected HF as well as in patients with asymptomatic left ventricular systolic dysfunction. The prognostic information obtained from BNP levels in HF and acute myocardial infarction patients seems even more promising.

Nesiritide is a synthetic peptide, homologous to endogenous BNP. It is a balanced vasodilator with diuretic and natriuretic properties. It decreases the elevated levels of neurohormones resulting from activation of the sympathetic and renin-aldosterone systems in HF. The results of clinical trials involving more than 2000 patients with decompensated HF are now available. In these trials nesiritide was administered by single or repeated bolus injections, as well as by sustained infusions.

Nesiritide has been shown to produce a potent, dose-related vasodilator effect that is rapid in onset and sustained during infusion. Balanced vasodilation is reflected by decreases in systemic vascular resistance, pulmonary artery wedge pressure and right atrial pressure. No tachyphylaxis has been observed in these trials. Efficacy of nesiritide in the treatment of decompensated HF has been demonstrated. Trials comparing nesiritide with conventional treatment of decompensated HF showed that nesiritide compares favorably to standard agents. The safety profile has been excellent with a dose-dependent hypotension as the major side effect. Ventricular arrhythmia was not more frequent in patients treated with nesiritide than with placebo. Thus, nesiritide appears to be useful as a first-line agent in the treatment of patients with decompensated HF.