
VVI mode is the most common form of permanent pacing. The cardiac performance in 12 patients with VVI pacing (complete A-V block and sick sinus syndrome) were assessed by ECG gated blood pool scintigraphy (GBPS) using Tc-99m labelled red blood cell, then pacing rate were changed from 40 to 90 (every 10 bpm).

Cardiac output (CO) was measured by dye dilution method. Left ventricular ejection fraction (EF) and Phase image was calculated from GBPS images. Left ventricular stroke volume (SV), enddiastolic volume (EDV) and endystolic volume (ESV) were also calcu-lated, and moving images were analysed. In the result, the higher heart rate produced decreased EF, SV, EDV, slightly increased CO, and slightly decreased ESV. The asynchronous left ventricular wall motion were also observed in higher pacing rates.


Differences in the effects of [1] pacing rates (PR) and [2] pacing modes (PM) on LV ejection and filling properties were analyzed by a high resolution (10msec) computerized cardiac nuclear probe (CNP) in eighteen pts with implanted programmable DDD, DVI or respiratory rate dependent VVI (BI) pacemakers. (*p<0.05 paired t-test) [1] On AAI (atrial) and AVs (sequential) PM, according to increase in PR(90-110/min), LVEF*, ER*, PFR* and ACR* (atrial contribution ratio/SV) increased significantly* (VSPR70), and point of PFR shifted from the early diastole to atrial contraction (ACT) phase. While on VVI (ventricular) PM, LVEF and ER did not change despite of increase in PR, and ACR revealed nil. [2] LVEF and ER showed tendency to be higher on AAI and AVs compared to those on VVI at PR 90-110. Analyses by CNP clarified the increasing physiological importance of ACT at increasing PR. CNP would be extremely useful for noninvasive cardiodynamic investigation to establish the physiological LV filling and ejection.


Exercise testing was performed with TL-201 myocardial scan in 19 patients with ST segment depression on exercise ECG and normal coronary angiogram. Their hemodynamics on exercise was compared with those in normal subjects (group I, n=46) and in patients with effort angina pectoris (group II, n=21).

3 patients in group II showed transient defect on TL-201 scintigram soon after exercise. Left ventricular ejection fraction increased gradually in group I and group II except 2 patients with transient defect on exercise TL-201 scan. In 2 of 3 patients in group II with transient defect on exercise TL-201 scan, LVEF was decreased during exercise. Pulmonary arterial diastolic pressure increased over 20 mmHg during exercise, but it showed no change or slight increase during exercise in group II. And also in group II, patients with transient defect on exercise TL-201 scan revealed the highest pulmonary arterial diastolic pressure during exercise.

In conclusion, group II was classified into two group according to their hemodynamics on exercise and their exercise TL-201 scintigraphy.