

## Noninvasive quantification of regional myocardial blood flow and ammonia extraction fraction using Nitrogen-13 ammonia and positron emission tomography

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This report describes the theoretical basis and a method to quantitate regional myocardial blood flow (RMBF) and ammonia extraction fraction (E) in man, noninvasively, with N-13 ammonia and positron emission tomography (PET). Two patients with hypertrophic cardiomyopathy, whose left ventricular (LV) walls were markedly thick, were employed in this study to avoid partial volume effects and cross contamination between LV walls and blood pool. RMBF and E were calculated from time-activity curves of myocardial tissue and left atrium derived from serial 6-second PET images of the heart. The time-activity curve of left atrium was used as an arterial input function. The results were RMBF =  $67 \pm 4$  ml/min/100 g, E =  $80 \pm 13\%$  and  $65 \pm 10$  ml/min/100 g,  $81 \pm 16\%$  for each patient. The validity of the present method was discussed.

**Key words:** Dynamic positron emission tomography, Regional myocardial blood flow, N-13 ammonia, Hypertrophic cardiomyopathy