

Noninvasive identification of left ventricular involvements in arrhythmogenic right ventricular dysplasia: Comparison of ^{123}I -MIBG, ^{201}Tl Cl, magnetic resonance imaging and ultrafast computed tomography

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We examined the feasibility of myocardial ^{123}I -MIBG, ^{201}Tl Cl, magnetic resonance imaging (MRI) and ultrafast computed tomography (UFCT) for the early detection of left ventricular involvements in 15 patients with arrhythmogenic right ventricular dysplasia (ARVD). Radionuclide ventriculography (RNV) and myocardial imaging with ^{123}I -MIBG, ^{201}Tl Cl, MRI and UFCT were performed in all 15 patients and in 10 normal subjects.

The patients' scans were visually interpreted by two nuclear medicine physicians taking into consideration the extent score (ES) and severity score (SS) calculated by using the bull's-eye view in relation to normal data derived from the normal subjects. The left ventricular ejection fraction (LVEF) was measured by RNV. Fourteen (93%) patients showed regional ^{123}I -MIBG defects, while 12 (80%) patients showed regional ^{201}Tl Cl defects. The ES and SS were higher in ^{123}I -MIBG than ^{201}Tl Cl (ES: 31.5 ± 18.5 vs. 17.5 ± 18.2 , $p < 0.01$, SS: 34.8 ± 42.2 vs. 16.9 ± 37.5 , $p < 0.01$). Abnormal UFCT and MRI findings suggesting fatty involvements of the LV myocardium were demonstrated in 7 patients (Group B), while 7 patients showed regional ^{123}I -MIBG defects without abnormal UFCT and MRI findings (Group A). ^{123}I -MIBG was significantly more sensitive than UFCT and MRI ($p < 0.05$), although one patient, an exception, showed abnormal UFCT findings for the apex of the LV myocardium without abnormal ^{123}I -MIBG and MRI findings. The LVEF, as a measure of LV systolic function, was better preserved in Group A than in Group B (59.3 ± 3.6 vs. 45.8 ± 5.8 , $p < 0.01$).

The present findings indicated that myocardial imaging with ^{123}I -MIBG sensitively detects myocardial damage in patients with ARVD in the early stage when cardiac systolic function is still preserved.

Key words: arrhythmogenic right ventricular dysplasia, ^{123}I -MIBG, ^{201}Tl Cl, magnetic resonance imaging, ultrafast computed tomography imaging