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High-tension electrical injury to the heart as assessed by radionuclide imaging

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To evaluate cardiac complications associated with electrical injury, 7 patients with high-tension electrical injury (6,600 V alternating current) underwent ^{201}Tl and ^{123}I-metaiodobenzylguanidine (MIBG) imaging in addition to conventional electrocardiographic and echocardiographic assessments. Electrocardiography showed transient atrial fibrillation, second degree atrioventricular block, ST-segment depression, and sinus bradycardia in each patient. Echocardiography showed mild hypokinesis of the anterior wall in only 2 patients, but ^{201}Tl and ^{123}I-MIBG myocardial scintigraphy showed an abnormal scan image in 6/7 and 5/6 patients, respectively. Decreased radionuclide accumulation was seen primarily in areas extending from the anterior wall to the septum. Decreased radionuclide accumulation was smaller in extent and milder in degree in ^{123}I-MIBG than in ^{201}Tl imaging. These results suggest that even in patients without definite evidence of severe cardiac complications in conventional examinations, radionuclide imaging detects significant damage due to high-tension electrical injury, in which sympathetic nerve dysfunction might be milder than myocardial cell damage.

Key words: electrical injury, cardiac complication, thallium myocardial imaging, ^{123}I-metaiodobenzylguanidine