Cardiac involvement in muscular dystrophies: Role of myocardial perfusion imaging

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Abstract

Technetium-99m-methoxy isobutyl isonitrile (^{99m}Tc-MIBI) myocardial perfusion imaging (MPI) is a functional imaging method with relatively poor specificity but high sensitivity. We present 48-year-old man with cardiac involvement due to muscular dystrophies (MD). Myocardial perfusion imaging rest images revealed regional myocardial perfusion decrease in multiple walls, enlarged heart and decreased left ventricular systolic function. The lesion location of MPI was consistent with that seen on CMR. Our case showed MPI was useful for detection and evaluation of the MD patient with cardiac involvement. In addition, imaging findings in combination with clinical history and other data are important. The case highlight is the value of MPI in myocardiopathy.

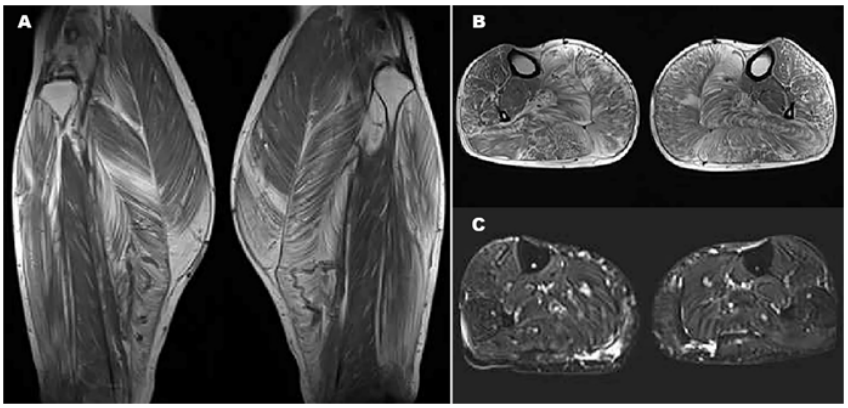

Figure 1. A 48-year-old man with MD complained of progressive calf muscle weakness and leg swelling for more than 10 years, which was confirmed by muscle biopsy and genetic testing. Bilateral lower extremities MRI showed gastrocnemius steatosis, which is the typical sign of MD [1, 2].

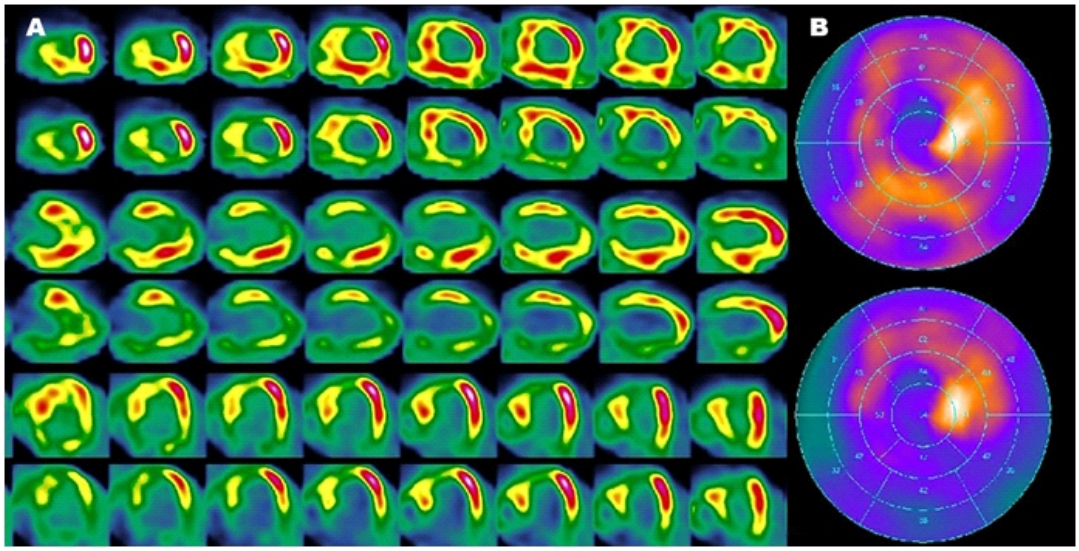

Figure 2. The man presented to the nuclear laboratory for a ^{99m}Tc-MIBI MPI test, who complained of chest tightness and shortness of breath for 1 month. Cardiac involvement often develops into progressive dilated cardiomyopathy, which has become the leading cause of death in patients with MD [3, 4]. The bio-markers were elevated: high-sensitivity troponin-I (hsTnI) 0.0520 (<0.0262ng/mL), NT-proBNP 775.70 (<125pg/mL), creatine kinase (CK) 128.4 (50.0-310.0U/L), lactate dehydrogenase (LDH) 461 (120-250U/L), and CK isoenzyme MB (CK-MI) 24.3 (0.0-24.0U/L). Myositis-specific autoantibodies were all negative. The ECG was abnormal. Myocardial perfusion imaging rest images application of attenuation corrected (row above) and non-corrected (row below) showed abnormal perfusion pattern, revealed regional myocardial perfusion decrease in multiple walls, the location of lesions on MPI was consistent with the findings on CMR. And the quantitative analysis parameters: EDV 342mL, ESV 311mL, EF 9%. Radionuclide MPI can reveal myocardial damage from any cause [5-7]. There are few reports of single photon computed tomography used in MD patients with cardiac involvement.

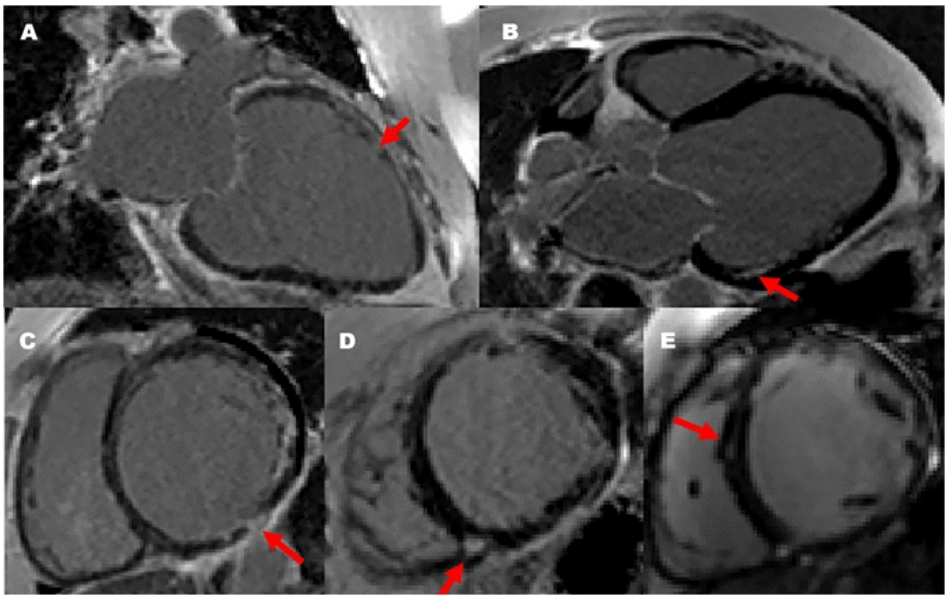

Figure 3. Cardiac MRI revealed multiple focal late gadolinium enhancements in the myocardium (arrows), which indicated multiple focal myocardial fibrosis [8]. The quantitative analysis parameters: EDV 394mL, ESV 346mL, EF 12.2%.

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