Preexcitation And Myocardial Infarction: A Case With Pre- And Post Percutaneous Coronary Intervention And Pre- And Postablation

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Introduction: The electrocardiographic (ECG) diagnosis of myocardial infarction (MI) in patients with Wolff-Parkinson-white (WPW) syndrome is often difficult (1,2). The abnormal activation sequence in WPW syndrome may mask the characteristic ECG findings of MI. The presence or absence of Q waves is often confusing in patients with preexcitation and possible infarction. Besides from delta wave, some reports also attributed the apparent T-wave changes in pre-excited patients to the clinical manifestations of acute ischemic injury (3,4). This report describes an occurrence of myocardial infarction in a patient WPW syndrome.

Methods: Case presentation A 60-year-old male patient presented as chest pain during exercise. His past medical history was unremarkable except for a 20 years history of smoking. The initial ECG showed sinus rhythm with positive delta waves in the precordial leads, lead I and lead aVL, and negative delta waves in the inferior leads (Fig 1). Physical examination was unremarkable and the laboratory data revealed normal serum level of troponin I, maximum creatine kinase (CK), and creatine kinase -MB (0.01(ng/ml), 68(U/l), and 1.7(ng/Ml), respectively). Most of the discomfort was resolved after taking nitroglycerin. The follow up laboratory data after 12 hours were significant for a CK–MB of 12.7 (U/l) and troponin I of 1.19(ng/ml) coexisting with isoelectric ST- segments in the lead aVL and precordial leads (Fig 2). Cardiac catheterization was performed on the next day which revealed significant stenosis of the proximal left anterior descending artery (LAD). Percutaneous coronary intervention was performed, and a stent was deployed into the proximal to middle LAD. The ECG at two days later showed negative T waves in leads V3-V6 (Fig 3). One month later, ECG showed persistent preexcitation with resolution of repolarization abnormalities (Fig 4). This patient then underwent an invasive electrophysiologic study which demonstrated a ventricular bypass tract with inducible orthodromic atrioventricular reciprocating tachycardia. Radiofrequency ablation for the right posterior septal wall accessory pathway was done successfully. The 12-lead ECG demonstrating the memory T wave after ablation is presented in Figure5. One week after his ablation, ECG showed a normal PR interval and the disappearance of preexcitation (Fig 6).

Result: Discussion Only a few cases in the literature reported a clear diagnosis of myocardial infarction in pre-excited patient by other techniques and validated ECG data, which were masked by pre-excitation or ST-T change.(1,5). This case provides a unique opportunity for continuous electrocardiographic observation of myocardial infarction and after radiofrequency ablation.

Conclusion: Acute myocardial infarction and pre-excitation can occur simultaneously. Clinicians should be aware of this ECG pitfall to avoid misdiagnosis.