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Abnormal EKG in Young Female with Cardiac Arrest

A 27-year old female with a history of anxiety and asthma was brought to the Emergency Department after becoming unresponsive. Her initial cardiac rhythm was asystole, which spontaneously converted to ventricular fibrillation and was restored to sinus rhythm after defibrillation. Upon arrival to the emergency department, the patient arrested again, with pulseless electrical activity, followed by successful resuscitation after three minutes. Bedside transthoracic echocardiogram showed preserved contractility with no regional hypokinesis. Post resuscitation electrocardiogram (ECG) was remarkable for diffuse ST segment depression in leads II, III, aVF, V2-V4 and ST elevation in aVR. The ST elevation in aVR raised a concern for cardiopulmonary arrest, due to acute coronary syndrome in the left main or proximal left anterior descending artery, prompting a Cardiology consultation. CT of head was remarkable for subarachnoid hemorrhage, likely due to an aneurysmal rupture. The patient was admitted to the neurocritical care unit, but never regained consciousness. The family elected to withdraw care and the patient died.

The ECG plays a critical role in the management for acute coronary syndrome. Based on the ACC/AHA guidelines for the management of ST elevation myocardial infarction, ST segment elevation of aVR, with diffuse ST segment depressions on ECG, may suggest occlusion in the left main or proximal left anterior descending artery. However, the diffuse ST depressions observed in this ECG may also be observed in a subarachnoid hemorrhage. Aneurysmal SAH often occurs in younger females with a low pre-test probability for coronary artery disease. Our case highlights the importance of considering SAH in the differential diagnosis of ECG changes, since anticoagulation for treatment of a presumed acute coronary syndrome would further worsen a subarachnoid hemorrhage.