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Electrocardiogram Quiz – Case 31

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A 67-year-old female with no past medical history was referred to our Department for an episode of syncope. The clinical examination and the two-dimensional and Doppler echocardiography were normal. The 12-lead surface electrocardiogram (ECG) is depicted in figure 1.

Questions

a. What abnormalities are depicted on the 12-lead ECG (fig. 1)?
b. What is the clinical significance of these abnormalities?

Comment

The Stokes-Adams syndrome is defined as an abrupt, transient loss of consciousness due to sudden but pronounced decrease in the cardiac output, which is caused by a sudden change in the heart rate or rhythm. Vasovagal syncope or epilepsy is not included in the aforementioned definition, despite the fact that patients with Stokes-Adams syncope may exhibit seizures during periods of cerebral ischemia.

Following a Stokes-Adams attack, and when the patient recovers from the loss of consciousness, a peculiar ECG pattern may be present, characterized by a giant T wave inversion. Although some T wave inversion is common in many conditions, the term "giant T waves" is reserved for a select number of clinical entities that produce truly deep (>5 mm amplitude) T wave inversion. The differential diagnosis of this T wave condition includes hypokalemia, apical cardiomyopathy, severe central nervous disorders (increased intracranial pressure resulting in extreme vagal withdrawal), acute cardiac ischemia (repolarization abnormalities), massive pulmonary embolism (acute right heart strain), post-tachycardia syndrome ("cardiac memory" phenomenon), and Stokes-Adams attack (especially when due to severe bradycardia or complete atrioventricular block). In any of the above cases, the most widely accepted mechanism resulting in post syncope giant T wave inversion is acute adrenergic

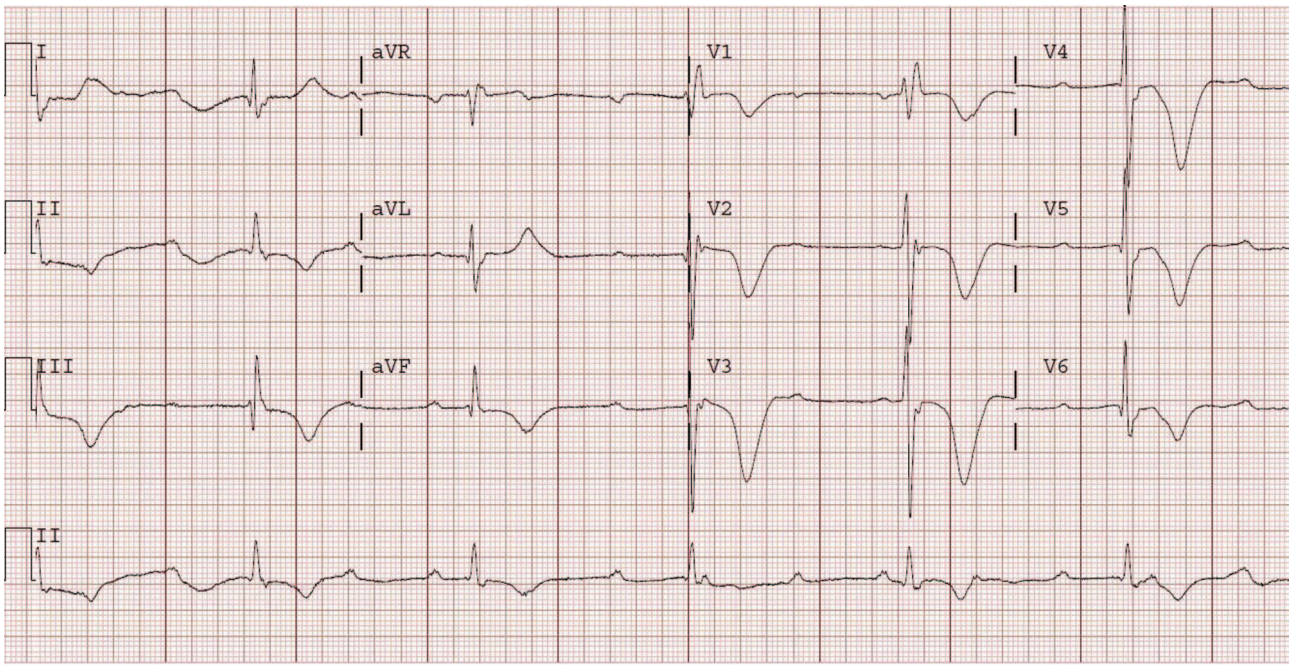

Figure 1

surge triggered by transient cessation of circulation.

In the present case, negative cardiac enzymes, as well as brain and thorax computed tomography imaging, along with the patient's history, led the treating team to the diagnosis of Stokes-Adams attack. The patient was referred to the Electrophysiology Unit for further investigation.

References

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2. HADJIKOUTIS S, O'CALLAGHAN P, SMITH PE. The investigation of syncope. *Seizure* 2004, 13:537–548

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Diagnosis: *Post syncope giant T wave inversion*