CLINICAL PRACTICE

Clinical Images

ST-Segment Elevation and Minimally Reactive Pupils

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A 71-year-old woman with multiple sclerosis and hypertension lost consciousness in bed. Paramedics noted she was breathing spontaneously but had a Glasgow coma scale score of 3. An electrocardiogram (ECG) revealed new ST

segment elevations in V2–V6 (Fig. 1). Her lab tests were significant for a troponin of 0.09 micrograms/liter (normal laboratory value is less than 0.05). The patient's pupils were anisocoric, fixed and non-reactive. Computerized tomography of the brain revealed a large left-sided fronto-temporal sub-arachnoid and intraventricular hemorrhage with right sub-falcine shift and early hydrocephalus (Fig. 2). After emergent consultation, neurosurgical and cardiac interventions were deferred, and she died six hours later.

Intracranial hemorrhage is frequently associated with electrocardiographic changes, thought to be indicative of

Figure 1. An electrocardiogram (ECG) revealed new ST segment elevations in V2–V6.

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Figure 2. Computerized tomography of the brain revealed a large left-sided fronto-temporal subarachnoid and intraventricular hemorrhage with right sub-falcine shift and early hydrocephalus.

secondary cardiac injury due to over activity of the sympathetic autonomic nervous system¹. Patients with intracerebral bleeding frequently have ECG abnormalities, with incidences varying from 27–100% even without underlying cardiac disease². QT prolongation is the most common abnormality but U waves, T-wave inversions and tachyarrhythmias are also common^{2,3}.

ST segment elevations, consistent with underlying ischemia, can be detected as well^{2,3}. This patient had a recent normal non-invasive cardiac evaluation highlighting the need for vigilance for intracranial pathology with abnormal ECGs in the appropriate clinical setting.

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