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IMAGES IN CARDIOLOGY

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Widespread ST segment elevation caused by cerebral infarction

A 44 year old Chinese woman was found unconscious at home. She had known hypertension, peripheral vascular disease, schizophrenia, and craniotomy for traumatic intracranial haemorrhage. She had spontaneous breathing, rate 16 resps/min, blood pressure 134/100 mm Hg, pulse 112 beats/min, and oxygen saturation 95% (ambient air). Bowel and urinary incontinence were noted. There was no physical response to pain, and plantar responses were equivocal. The pupils were normal and reactive. No focal neurological signs were present. The rest of the examination was unremarkable.

The ECG showed sinus rhythm with widespread convex ST segment elevation in leads I, II, III, aVF and V2–6, suggestive of extensive myocardial infarction (panel A). Serum electrolytes were normal. A computed tomographic (CT) brain showed periventricular ischaemia, and an old right basal ganglia infarct without haemorrhage.

Coronary angiography revealed normal arteries without vasospasm and an echocardiogram showed normal ventricular systolic function. An electroencephalogram (EEG) on day 3 showed right temporal epileptogenic activity, with diffuse encephalopathy. Toxicology screen was negative.

The patient remained comatose, developed rhabdomyolysis, and acute renal failure. Magnetic resonance imaging (MRI) of the brain on day 6 showed infarction of the entire right cerebral hemisphere, left frontal lobe, and bilateral thalami. A repeat EEG on day 7 showed severe, diffuse encephalopathy. ST segment elevations on ECG nearly resolved on day 7 (panels B and C), a day before the patient died.

We believe the patient had status epilepticus resulting in multi-organ failure. The ECG changes were likely due to extensive brain infarction caused by status epilepticus. The postulated mechanism is excessive sympathetic tone and catecholamine production, leading to myocardial injury with ECG changes. We believe this is a rare case of severe cerebral infarction resulting in massive ST segment elevation, mimicking extensive myocardial infarction.

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