Reversible Suppression of Electroencebral Activity

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Keywords

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Figure 1. Patient's EEG recording obtained using standard 10-20 electrode placement system supplemented with a single electrocardiogram chest electrode. EEG just prior to the code (A) shows baseline diffuse slowing and left frontal sharps. During the code (B) EEG becomes diffusely suppressed. Four hours after the code (C) EEG has returned to prior baseline. (EEG indicates electroencephalogram.)

Case Summary

A 66-year-old man experienced *pulseless electrical activity* arrest/hypotension following a continuous venovenous hemodialysis obstruction during electroencephalography (EEG) monitoring. He was recovering well from status epilepticus following surgery for aortic and mitral valve replacement

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for bacterial endocarditis several days prior. Before the code (Figure 1A), the patient was alert and following commands. Remarkably, the episode was accompanied by rapid suppression of electrocerebral activity (Figure 1B) lasting 15 minutes during resuscitation, followed by return to baseline EEG (Figure 1C) and full neurologic recovery. Similar suppression of electrocerebral activity, “flat EEG,” has been observed following vasovagal syncope¹⁻³ and cerebral edema due to hepatic failure.⁴ In these cases, background suppression was reversible and may represent neuronal hyperpolarization resulting from transient hypoperfusion and/or metabolic disturbances. The observation is important, because the acute loss of definitive electrocerebral activity is not indicative, on its own, of permanently compromised brain function. The underlying mechanisms of reversible EEG suppression, and its potential role in modulating brain network function, remain to be determined.

Declaration of Conflicting Interests

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