Reviewer’s report

Title: Confounding Factors In Diagnosing Brain Death: A Case Report

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Level of interest: A paper whose findings are important to those with closely related research interests

Advice on publication: Accept after discretionary revisions

Burns and Login report a 62-year old woman who collapsed at home. Cardiopulmonary resuscitation was started 15 min after the collapse by a basic life support team and another 15 min later by an advanced cardiac life support team, which confirmed absent respiration and asystolia. With atropine and epinephrine, her pulse was restored. Seven hours later, diffuse severe hypoxic brain damage was documented by CT. Another 3 hours later (i.e. 10 hours after her collapse), she met all clinical criteria to diagnose brain death, i.e. coma, absent brain stem reflexes, and apnea. Elevated TSH and low T4 indicated hypothyroidism and prevented the authors to diagnose brain death. The authors state, that their case "taught us two clinical lessons. First the importance of recognizing that certain medical illnesses, like severe hypothyroidism, prevent diagnosing brain death by clinical criteria, even when the three neurological features exist. Second, a hopeless prognosis may still allow for withdrawal of care but only when a surrogate can participate in clinical decisions and agree with the proposal".

These 2 points are matter of courses, which have to be known by anyone involved in the diagnosis of brain death. It is completely right, that the presence of severe hypothyroidism usually prevents diagnosis of brain death. In the present case, however, one may argue, that hypothyroidism have contributed substantially to the clinical state of the patient. Obviously, she was awake before her collapse, i.e. hypothyroidism has not impaired her consciousness before suffering severe cerebral anoxia during the resuscitation, which was followed by diffuse brain edema with raised intracranial pressure leading to absent tracer uptake in the brain parenchyma as documented by Technetium-brain scan.

In my opinion, elevated TSH and low T4 not necessarily prevent diagnosis of brain death, when there is no doubt, that the patient had suffered an acute and catastrophic cerebral accident, and that there was no impairment of consciousness before the CNS catastrophe. This would be completely different in a patient, who was found comatose without clinical and neuroimaging evidence of an acute CNS catastrophe. In such circumstances, the presence of severe hypothyroidism would prevent the diagnosis of brain death. I think, this should be discussed in more detail.

In conclusion, the observation of Burns and Login illustrate that diagnosis of brain death may be difficult in individual patients even though there are Practice parameters for determining brain death in adults from the Quality Standard Subcommittee of the American Academy of Neurology (Neurology 1995;45:1012-1014).
Competing interests:

None declared.