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NEUROLOGICAL PICTURE

Reversal sign after cardiopulmonary arrest

A 70 year old man with a 20 year history of diabetes mellitus and moderate hypertension was found unconscious in cardiopulmonary arrest of unknown duration. After 10 minutes of unsuccessful cardiopulmonary resuscitation an emergency nasotracheal intubation was performed, and mechanical ventilation was initiated with 100% oxygen at a rate of 20 per minute. On arrival at the hospital the patient had no detectable pulse and on examination he was unresponsive to noxious stimuli, with the pupils dilated and fixed. All brain stem reflexes were absent. The oxygen tension (P_{aO_2}) was 58 mm Hg, the carbon dioxide tension (P_{aCO_2}) was 54 mm Hg, and the pH 6.77. He was defibrillated with 200, 300, and 360 J, and therapeutic measures included atropine, adrenalin, dopamine infusion, and lidocaine administration. Resuscitation lasted 1 hour until a recordable blood pressure was obtained. Non-contrast computed tomographic scans of the brain performed 1 hour after resuscitation showed diffuse cerebral oedema

with effacement of the cerebral sulci and of the brainstem cisterns. In addition, there was decreased density of grey matter and relative increased density of white matter, a finding referred to as the reversal sign. The middle (curved arrows) and anterior (arrow) cerebral arteries appeared hyperdense due to the absence of intracerebral blood flow (figure A), and the ventricular system was compressed ("slit ventricles" in figure B). These injuries were due to prolonged cardiopulmonary arrest and global brain ischaemia. One hour later cardiopulmonary arrest recurred, and the patient could not be resuscitated. Twenty four hours after admission the patient was declared brain dead and removed from the respirator.

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