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Hyperbaric oxygen therapy (HBOT) in a child with suspected influenza-associated encephalopathy

To the Editor:

A three-year-old girl felt feverish, and the next day became comatose with convulsions. A computed tomography scan revealed diffuse cerebral edema. Encephalopathy associated with influenza (EI) was suspected. On day two she was transferred to the intensive care unit where she underwent hypothermia therapy under artificial ventilation. On day eight, influenza-A-positive antigen was identified in her nasal discharge. She recovered from her critical state and was extubated. However, her consciousness remained disturbed with no signs of recovery over the next six days. In Japan, hypoxic encephalopathy is one of the indications for HBOT. She had status epilepticus, which might also be suggestive of brain hypoxia. With this in mind, we decided that HBOT was a treatment option. After obtaining informed consent from her parents, HBOT (one session per day) was started on day 14. After the second HBOT session, she made eye contact and said one word. Six HBOT sessions were performed in total, and the patient was discharged home on day 34 with no sign of brain dysfunction. No factor other than HBOT readily explained the dramatic recovery, a situation analogous to that described in a previous study.¹ For some years, HBOT has been used for the treatment of coma due to post-anoxic encephalopathy,² and the active use of HBOT for global cerebral ischemia and coma has also been stressed. However, the benefit of HBOT for coma associated with EI remains unclear. EI is a severe condition which can result in serious brain damage and cause rapid death within a few days. Mortality is as high as 26.7–43.8%^{3,4} and, even in survivors, the incidence of neurological sequelae is 20.3–25.8%.^{3,4} Although ways of preventing EI-induced death and sequelae are urgently needed, reliable methods do not yet exist. Using hypothermia against EI is a possible approach and its effectiveness is currently being evalu-

ated in Japan. Actually, HBOT is not considered an appropriate indication for patients with closed head injury (CHI).⁵ However, since no standard therapy exists for EI-associated coma, and since EI is in some respects different from CHI, we suggest that HBOT may be of use to treat a coma that persists after initial therapy in the intensive care. Even delayed HBOT appears to be worthy of consideration.

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