



Blood glucose level after febrile convulsion

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To the editor:

Febrile convulsion is a common clinical problem in infancy or childhood that usually occurs at 3 months to 5 years of age and is associated with fever. In the United States, 3% to 5% of children experience febrile convulsion at <5 years of age; while in Japan, the frequency is 7%¹. However, hyperglycemia is proportionally frequent in the period of severe illnesses and may be the possible result of an uncoordinated insulin response to the increased glucose level that the body may need during stress. It generally coincides with the absence of a prediabetic condition. Previous studies explained the pathophysiological mechanism underlying the condition, but none considered which conditions make patients more prone to exacerbated stress hyperglycemia². To the best of our knowledge, only a few reports of febrile convulsion with hyperglycemia in the mid-east region of Japan. We present a child who was asymptomatic until the age of 1 year, when he presented febrile convulsion and biochemical findings of hyperglycemia.

A 1-year-old boy was brought to the Emergency Department by her mother with a chief complaint of upward gaze, abnormal movements in his extremities (generalized tonic-clonic seizure) lasting for 2–3 minutes, followed by a period of somnolence and a high-grade fever (body temperature >39°C). The child had an unremarkable neonatal growth and course, and his development was normal for his sex and age. The family had no history of similar illness. The child was not receiving any medication and had no known allergies. Laboratory test results obtained 1 to 2 hours after the seizure yielded the following values: white blood cell, 10.2 K/ μ L; red blood cell, 3.92 M/ μ L; hemoglobin, 11.3 g/dL; platelet, 262.000/mm³; hematocrit, 36%; glucose, 189 mg/dL; sodium, 135 mEq/L; potassium, 4.2 mEq/L; bicarbonate, 18 mEq/L; chloride, 101 mEq/L; blood urea nitrogen, 10 mg/dL; creatinine, 0.3 mg/dL; phosphate, 3.8 mg/dL; calcium, 8.9 mg/dL; ionized calcium, 4.9 mg/dL; alkaline phosphatase, 52 IU/L; and albumin, 4.2 g/dL. The patient received 1,500 mL normal saline as maintenance fluid therapy. The blood glucose levels at 6, 12, and 24 hours after admission were 162, 141, and 117 mg/dL, respectively. One day after admission, the fasting blood sugar (FBS) level was 92 mg/dL. At the day of admission, because the child was in postprandial condition, we could not assess the FBS level. His body temperature was 36.9°C upon discharge from the hospital. According to the combination of typical presentations and the diagnosis of febrile convulsion, the child underwent a 24-hour observation and treated with bedside diazepam to prevent seizure. The limitation of the present study was the lack of laboratory instruments for monitoring insulin, glycosylated hemoglobin, and C-peptide levels.

Considering the occurrence of hyperglycemia after the febrile convulsion in this case, the relationship between the number of generalized tonic-clonic seizures and the intensity and/or duration of febrile seizure with blood glucose level should be investigated in future studies that aim to elucidate the mechanisms and components responsible for the effect of febrile convulsion on blood glucose level.

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Received: 28 May, 2014

Revised: 7 November, 2014

Accepted: 24 February, 2015

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Conflict of interest

No potential conflict of interest relevant to this article was reported.

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