Clinical commentary

Epileptic Disord 2016; 18 (2): 211-5

Initial manifestation of type I diabetes mellitus as an unusual cause of early post-operative seizures

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Received December 10, 2015; Accepted April 20, 2016

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Key words

- intractable epilepsy
- epilepsy surgery
- focal cortical dysplasia
- type I diabetes mellitus
- acute post-operative seizures

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Abstract

We present a case of an 18-year old patient who underwent resective epilepsy surgery for intractable epilepsy caused by focal cortical dysplasia. In the early post-surgical period, the patient started experiencing atypical seizures refractory to antiepileptic treatment. In due course, abnormally low levels of blood sodium and extremely high levels of blood glucose were discovered. Significant hyperglycaemia was originally ascribed to steroid-induced diabetes. Subsequently, specific antibodies for type I diabetes mellitus were detected, confirming the diagnosis. Following stabilization of glucose and electrolyte levels, the patient became seizure-free. To our knowledge, this is the first presentation of type I diabetes as the cause of early postoperative seizures. We discuss less common aetiologies of seizures in the early post-operative period, including metabolic disturbances. Based on our experience, we stress the importance of electrolyte and glucose monitoring in the setting of acute post-operative seizures.

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Case presentation

An 18-year old patient underwent resective epilepsy surgery for intractable epilepsy caused by focal cortical dysplasia.

On the first post-operational day, the patient started experiencing atypical seizures refractory to antiepileptic and anti-oedematous treatment. In due course, abnormally low levels of blood sodium and extremely high levels of blood glucose were discovered. Significant hyperglycaemia was originally ascribed to steroid-induced diabetes. Subsequently, anti-GAD and anti-IA2 antibodies, specific to type I diabetes mellitus, were detected, confirming the diagnosis.

Following stabilization of glucose and electrolyte levels, on the 19th post-operative day, the patient became seizure-free. To our knowledge, this is the first presentation of type I diabetes as the cause of early postoperative seizures.

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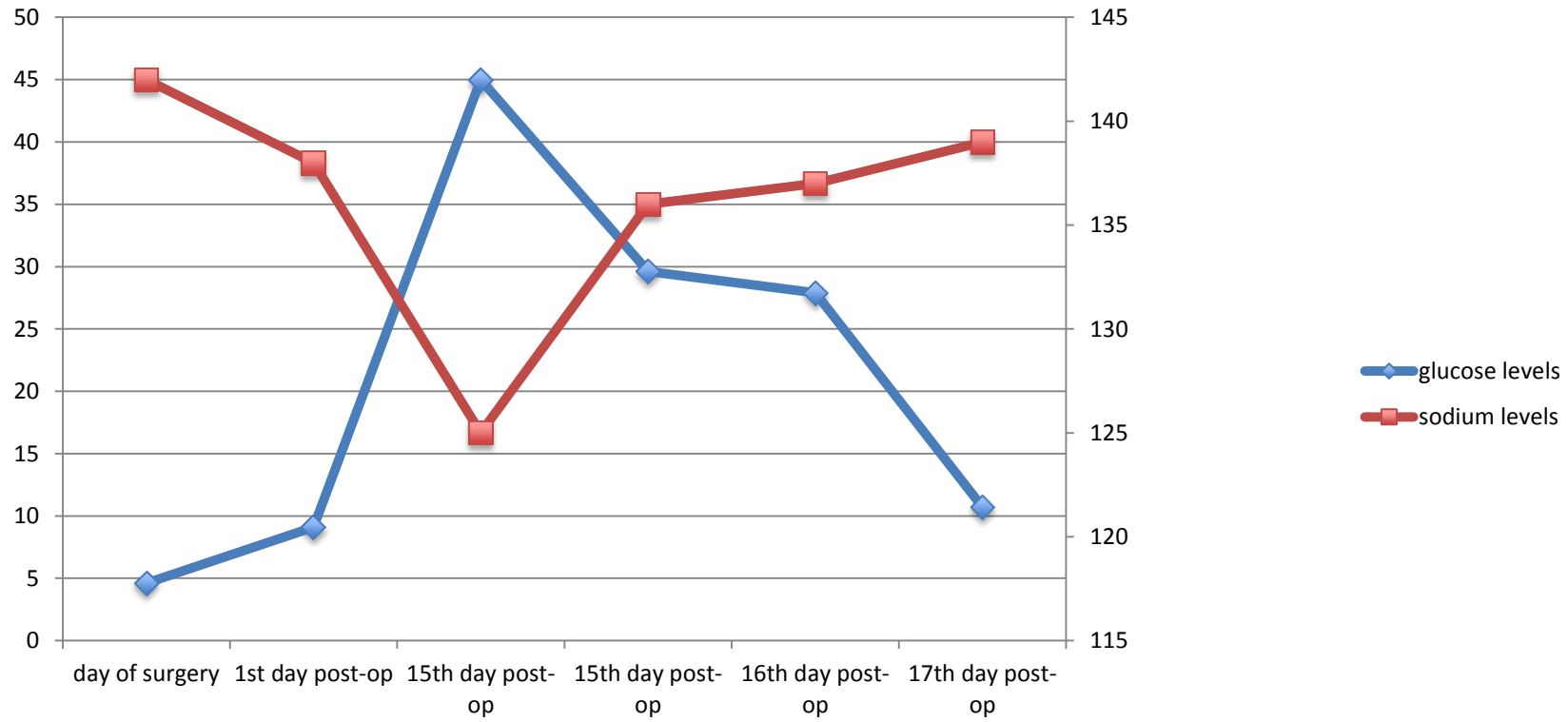
Association between blood glucose and sodium levels



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Long-term seizure outcome

Long-term seizure outcome after epilepsy surgery varies significantly depending on **underlying aetiology**, **completeness of resection, localization of the lesion, age at surgery**, etc. In larger surgical cohorts of patients with focal cortical dysplasia, **complete seizure freedom is achieved in ~65% of cases** (Krsek *et al*., 2009; Lerner *et al.*, 2009; Fauser *et al.*, 2015).

Acute post-operative seizures

Acute post-operative seizures (APOS) are defined as **seizures occurring from up to one week after epilepsy surgery** (Engel, 1993). The role of APOS in long-term prognosis has not been unequivocally established, however, **evidence suggests their appearance might be a negative prognostic factor after paediatric epilepsy surgery** (Greiner *et al.*, 2014, Park *et al.*, 2002).

Association between epilepsy and diabetes mellitus (DM)

Approximately 25% of patients with DM experience various types of seizures. Huang et al. (Huang, *et al.,* 2008) described a strong **association between poor glycaemic control in diabetic patients and a tendency for seizure recurrence and clustering** in the adult population. It is therefore believed that **satisfactory compensation of diabetes may lead to complete seizure and antiepileptic drug freedom**.

Summary

We demonstrated the **importance of blood electrolyte and glucose monitoring in the early post-operative period**. Our case also suggests that **the aetiology of acute post-operative seizures is crucial for optimal prognosis**, with **acute metabolic disturbance** possibly indicating a more **favourable outcome**. This hypothesis will, however, require further study on a larger patient population.

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