Insulinoma mimicking psychogenic non-epileptic seizures in a patient with refractory epilepsy

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Title

**Insulinoma mimicking psychogenic non-epileptic seizures in a patient with refractory epilepsy.**

Short title

Insulinoma coexisting with refractory epilepsy.

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Conflict of interest

The authors declare that there are no conflicts of interest related to this article
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Epilepsy has a high rate of false positive diagnosis [1]. Seizures may be mimicked by several conditions, including syncope, psychogenic non-epileptic seizures (PNES), and hypoglycemia. Insulinoma is an uncommon tumor that produces excess amounts of insulin, resulting in hypoglycemia. Neuropsychiatric symptoms of insulinoma-related hypoglycemia are frequently misdiagnosed as seizures [2-5]. We describe a patient diagnosed both with insulinoma and epilepsy.

A 39-year-old man with epilepsy was referred to the department of neurology with suspicion of PNES. His epilepsy started at the age of 19 years with episodes of unresponsiveness, oral and gestural automatisms consistent with temporal lobe seizures. Computed tomography was normal, electroencephalogram revealed focal sharps in the right temporal region. Magnetic resonance imaging (MRI) was not performed because of the presence of metallic osteosynthesis material in his maxilla and right humerus. Despite the use of many antiepileptic drugs (AEDs) he continued to have 4-5 seizures lasting 2-3 minutes per month. The new episodes differed from his previous seizures. For the past four months, the patient had experienced numerous episodes of weakness, sweating, tremor, and confusion lasting 5-25 minutes; occurring more often before breakfast. Neurological and general examination was unremarkable, medications consisted valproate, levetiracetam, and gabapentin. On admission low blood glucose level (1.8 mmol/l; normal range 3.3-5.6 mmol/l), was detected. Repeated measurements demonstrated consistently low levels with numerous recordings of <1.0 mmol/l. The patients was transferred to the department of endocrinology for further investigation.
The whole body scintigraphy with somatostatin analogue showed tracer accumulation in the projection of the pancreas (Fig 1 A.). The patient underwent abdominal surgery with the excision of the insulinoma and complete resolution of hypoglycemic episodes. Histopathological investigation confirmed a pancreatic islet cell low grade tumor (insulinoma). Subsequently metallic elements were removed and brain MRI was performed. MRI revealed a right temporal tumor (Fig 1. B). The patient underwent brain surgery; histopathology revealed a dysembryoplastic neuroepithelial tumor (DNET). AEDs have been discontinued with no recurrence of seizures.

Five years after abdominal and brain surgery the patient was symptom free.

Metabolic causes of seizure-like episodes such as hypoglycemia are potentially curable and may be fatal if untreated. Insulinoma is the most common pancreatic neuroendocrine tumor and is the most common endogenous cause of hyperinsulinemic hypoglycemia. The diagnosis of insulinoma is often delayed, with a substantial proportion of patients receiving a false diagnosis of epilepsy [5]. Several reports on insulinomas misdiagnosed as epilepsy have been published [2-3]. Fox and colleagues described insulinoma triggering both neuroglycopenic episodes and seizures in a patient with well controlled epilepsy [4]. To the best of our knowledge, this is a first report on the patient with pharmacoresistant epilepsy and insulinoma. What’s more, two types of low-grade tumors, DNET and insulinoma, were diagnosed and surgically removed in our patient. At the long-term follow-up the patient was seizure free and hypoglycemia free. This report highlights the need for careful assessment of new seizure types emerging in patients with epilepsy. In most cases of epilepsy coexisting with other types of paroxysmal episodes, PNES are diagnosed. Although PNES have been suspected in this case, investigations revealed neuroglycopenic epidodes.
In conclusion, although very rare, the possibility of the co-occurrence of epileptic seizures and hypoglycemic episodes due to insulinoma, should be taken into account in the presence of the new type of paroxysmal events.

Contribution statement

MB and ASS: data collection, literature review, writing manuscript. AS: manuscript revision.

References:


Fig 1. A. Somatostatin receptor scintigraphy with accumulation of the tracer in localization of the pancreas.
Fig 1. B. Brain magnetic resonance imaging (T2 Fluid-attenuated inversion recovery) showing the hyperintense tumor in the right temporal lobe.