Int J Biol Med Res. 2013; 4(1): 2975-2977

Contents lists available at BioMedSciDirect Publications

International Journal of Biological & Medical Research

Journal homepage: www.biomedscidirect.com

Case report

Insulinoma- a misleading neuroendocrine tumour

[a]Mahabalshetti AD, [b]Aithal KR , [c]Patil BS, [d]Patil PB

Assistant professor, SDM college of medical sciences and hospital, Sattur, Dharwad-580009, Karnataka, India.
Associate professor, SDM college of medical sciences and hospital, Sattur, Dharwad-580009, Karnataka, India.
Professor Department of Medicine, SDM college of medical sciences and hospital, Sattur, Dharwad-580009, Karnataka, India.
Assistant professor, Department of Medical imaging and Radiodiagnosis, SDM college of medical sciences and hospital, Sattur, Dharwad-580009, Karnataka, India.

ARTICLE INFO

Keywords:
Insulinoma a misleading
Neuroendocrine tumour
Hyperinsulinism
Hypoglycemia

ABSTRACT

Hypoglycemia is low blood sugar that could be caused by pancreatic tumors called insulinomas or islet cell tumors. The incidence is 1–4 per million1. While these tumors are usually benign, they produce large amounts of insulin, which lowers blood glucose levels. This is the opposite of the diabetes mellitus in which low insulin levels lead to hyperglycemia. Insulinomas present with the neuroglycopenic and sympathoadrenal symptoms induced by hypoglycemia2. Recurrent confusional states are typical of insulinoma. Other symptoms include visual changes, unusual behavior, palpitations, diaphoresis, and tremulousness3.

Some cases with insulinoma present with neuropsychiatric symptoms and are often misdiagnosed as psychosis4. In one study, as many as 20% of patients had been misdiagnosed with a psychiatric, seizure, or other neurological disorder before the true diagnosis of insulinoma was made5.

Because of its deceptive, disguising and nonpathognomonic symptomatology, insulinoma can pose a diagnostic dilemma even to a shrewd clinician and remain undiagnosed for years. The aim of reporting this case is to create clinical awareness among the healthcare professionals in order to avoid occurrence of a serious mistake in the diagnosis and treatment of insulinoma.

1. Case Report

A 58-year-old woman presented to our hospital emergency department with recurrent episodes of giddiness during morning hours, confusion and loss of consciousness without convulsions since one and half years. Her admission laboratory value was 36 mg/dl. After glucose infusion (100 ml of 25%) the level of consciousness became better and she was only lethargic. The patient was subsequently admitted to the hospital for further work up.

On detailed history analysis, patient had similar complaints on and off since one and half years. She consulted local hospital and was told to have low sugars almost all the time and was treated for the same and advised regular food intake. No h/o loss of weight/ seizures/ trauma/ weakness in the limbs/ diplopia/ dysphagia/ dysarthria/ nausea/ vomiting and tinnitus.

* Corresponding Author : **Dr.Amrut D Mahabalshetti,**
Assistant Professor, Department of Medicine,
SDM College of Medical Sciences and Hospital,
Manjushree nagar, Sattur, Dharwad-09. Karnataka
Email: amrutdm@gmail.com

Patient is a known case of hypertension on tablet amlodipine 5mg OD.Patient was diagnosed as diabetes mellitus two years back, started on oral hypoglycemic agents (OHA) - details of OHA not known. After the episode of giddiness and loss of consciousness, patient was advised to stop OHA. These episodes were occurring typically in the morning, just after waking. Over the 8–10 months before presentation, the patient noted that the episodes were increasing in frequency as well as occurring throughout the day.

On examination she was found to be a moderately built and nourished woman. Her vital signs were insignificant only for mild tachycardia. She had mild pallor. On neurological examination, she was drowsy, arousable, obeying simple commands, reflexes were normal and rest of the neurological examination was normal. Other systemic examination was unremarkable.

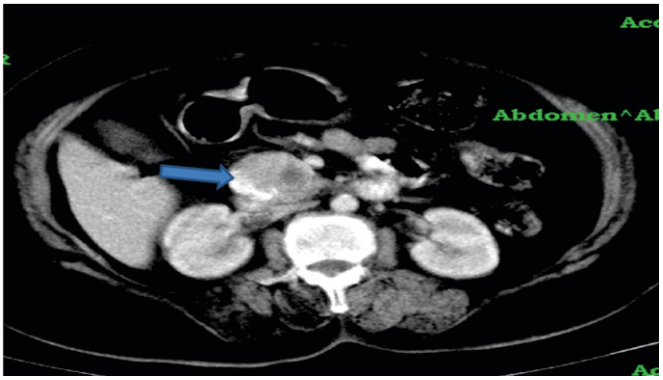
On labarotary investigation, serum glucose level determined in the emergency department was 36 mg/dl (normal range: 70 - 110 mg/dl).She received intravenous glucose and her symptoms promptly resolved. The results of liver, renal and thyroid function tests were normal and she had a normal cortisol levels.

Table 1: Results at termination of supervised fast (UHWI)

Variables	Result	Reference values
Fasting glucose (mg/dl)	41	90-110mg/dl
Insulin (IU/ml)	37.5	2-25 IU/ml
C-peptide (pmol/L)	1026	298–1324

In view of recurrent giddiness and patient being known hypertensive, Magnetic Resonance Imaging (MRI) Brain was done which showed no significant abnormality. Abdominal ultrasound (US) revealed no abnormality. In view of the clinical picture and laboratory data, the clinical impression was that of an insulinoma and computed tomography (CT) abdomen was advised. CT abdomen with contrast using pancreas protocol demonstrated a well defined rounded heterogeneously enhancing soft tissue mass is seen uncinate process and head region of pancreas. Mass shows calcification and non-enhancing cystic / necrotic areas. There is focal loss of fat planes between mass and right wall of superior mesenteric vein. There is encasement of superior mesenteric vein and superior mesenteric artery. Mass is seen closely abutting second and third part of duodenum. No intense enhancement is seen in mass on arterial phase. No other significant abnormality is seen. Above findings are suggestive of neoplastic pancreatic mass. In view of patients clinical profile this may represent insulinoma.

Fig 1: CT scan of abdomen showing insulinoma (arrow).



Patient was advised CT-guided biopsy and surgical management. Patient was not willing for further interventions and managed conservatively. Patient was managed with frequent high carbohydrate diet and dextrose containing tablets. Patient was symptomatically better and discharged from hospital.

2. Discussion

Insulinoma is a rare neuroendocrine tumour arising from beta cells of islets of Langerhans with an overall incidence of 4 cases per million per year. About 90% of insulinomas are solitary, benign, intrapancreatic and sporadic while 10% are multiple, malignant, extrapancreatic and familial. The familial insulinomas have a special predilection for occurrence in association with MEN-1 and von Hippel- Lindau disease.[6-8]

Under physiological circumstances, the pancreas secretes equimolar quantities of insulin and C-peptide from a common precursor (proinsulin). Contrarily, insulinoma predominantly secretes insulin (insulin-flooding) and causes hypoglycemia, especially but not exclusively in the fasting state. Hyperinsulinaemic hypoglycemia presents with two types of symptoms; 1) neuroglycopenic symptoms; dizziness,diplopia, blurring of vision, amnesia, obtundation, irrational behavior, seizures and coma and 2) adrenergic symptoms due to sympathetico-adrenal stimulation; anxiety,tremors,sweating,palpitation and hunger. The symptoms are classically precipitated by fasting, exertion and excitement and ameliorated by intake of sugars, sweets, fruits, and juices[9,10,11].

Clinical diagnosis of insulinoma is suggested by the presence of Whipple's triad; 1) occurrence of neuroglycopenic symptoms in the fasting state, 2) documentation of low blood glucose level (< 45 mg %) during the attack, and 3) dramatic alleviation of the symptoms on glucose administration. The biochemical hypoglycaemia in the face of inappropriately raised serum insulin and C-peptide levels and exclusion of surreptitious intake of exogenous insulin or oral hypoglycemic agents10. Control of blood sugar levels can be achieved by frequent small meals which are high in protein and complex carbohydrates, but low in simple sugars. For patients who are not good surgical candidates, who refuse surgery, or whose insulinoma was missed during surgery, as well as for patients with metastatic disease, medical therapy should be attempted. The goal of medical therapy is to prevent symptomatic hypoglycemia. Medications that have been used for this purpose include diazoxide, verapamil, phenytoin, and octreotide. Diazoxide diminishes insulin secretion and is the most effective drug for controlling hypoglycemia. Octreotide, the somatostatin analog, is also a common treatment for patients with unresectable tumors[9].

3. Conclusion

Although insulinoma is an uncommon disorder, prompt diagnosis is necessary to prevent complications of hypoglycemia

Acknowledgment: Nil

4. References

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