

Case Report

Insulinoma in the primary care: a case report

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Received: 24 August 2023

Accepted: 16 September 2023

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ABSTRACT

Insulinoma is an uncommon neuroendocrine tumor that can cause unspecific signs and symptoms. In this case report is presented a 79-year-old man with a history of diabetes and alcohol abuse. He presented several episodes of hypoglycemia with associated symptoms. Considering the alcoholic habits and the fact that he did not take hypoglycemic medication, it was considered that the alcohol abuse was the most probable cause. However, hypoglycemia didn't stop after he stopped drinking and the hypothesis of an insulinoma has occurred. He was referred to hospital consultation, but due to the COVID-19 pandemic, he lost follow-up for almost 2 years. He had new episodes of hypoglycemia and was hospitalized. A nodule in the uncinate process of the pancreas was detected on CT scan and he was subjected to an elective cephalic duodenopancreatectomy. Hypoglycemia can be a manifestation of several diseases. Insulinoma can mimic several pathologies, making it a challenging diagnosis. This case intends to report the importance of the family doctor in the diagnosis of pathologies with nonspecific signs and symptoms, as well as the orientation for secondary health care.

Keywords: Insulinoma, Hypoglycemia, Alcohol, Case report

INTRODUCTION

Insulinoma is a neoplasm that belongs to the group of neuroendocrine tumors of the pancreas, which, despite being rare, is the most frequent.¹

This uncontrolled hypersecretion of insulin generates signs and symptoms consequent to hypoglycemia, such as sweating, paresthesia, tremors, palpitations, mental confusion, visual changes, fatigue, or seizures.¹

In this paper we present a 79-year-old man who has hypoglycemia symptoms with a history of alcohol abuse.

This case report intends to reinforce the importance of the Family Doctor in the integration of the clinical past for the interpretation and analysis of the signs and symptoms, often non-specific, which one is confronted with in a consultation at the level of primary health care.

This case was reported according to The SCARE 2020 guidelines.

CASE REPORT

This clinical case focuses on a 79-year-old man who lives with his wife. He completed basic education up to the 4th grade and is currently retired.

He has a medical history of hypertension, type 2 diabetes mellitus, dyslipidemia, hyperuricemia and cerebrovascular disease (ischemic stroke in 2016). His medication: olmesartan + hidroclorotiazide 20 + 12.5 mg once a day, amlodipine 5 mg once a day, simvastatin 40mg once a day, aspirin 100 mg once a day, metformin 850 mg once a day and allopurinol 300 mg once a day.

He sought surveillance consultation at his family health unit, where he was seen by his family doctor, who was

concerned about his low capillary blood glucose measurements and requested test strips for home monitoring. When asked, he also described a low-speed traffic accident in the weeks before leading up to the consultation. In that episode the patient was assisted by the emergency vehicle, and a blood glucose level of 37 mg/dL was measured. He does not remember what happened but emphasizes that he felt much better after being given sugar. He was evaluated at the emergency department of the hospital, where an analytical study showed an ethanol level of 2.9 mg/dL. In this context, hypoglycemia related to alcohol consumption was assumed. Still at the emergency department, he was referred to the internal medicine consultation of the same hospital center, and the suspension of his antidiabetic medication was recommended.

In the family health unit consultation, the patient was explained that the antidiabetic medication he had been prescribed does not cause hypoglycemia. Need to follow a healthy diet and reduce alcohol consumption was addressed. Test strips for blood glucose monitoring were prescribed, and short-term reassessment was scheduled.

The patient returned to the family health unit consultation 2 weeks later. He brought the record of blood glucose measurements, which he performed twice a day, and sometimes they were between 40 mg/dl and 60 mg/dl, predominantly during the early morning. He also reported brief episodes of sweating with visual changes that ceased after eating. When asked, he denied alcohol consumption that could justify these values. In this sense, a laboratory study was requested.

The hemogram and ionogram within normal values; renal, thyroid, and hepatic function without alterations; glucose level of 48 mg/dl; glycated hemoglobin (HbA1c) of 5.2%; normal pituitary hormones and cortisol levels; negative insulin autoantibodies and insulin receptor antibodies; C-peptide level of 7.2 ng/dl (<4.2 ng/dl); insulin level of 65 µU/ml (<9.2 µU/ml).

Due to suspected endogenous hyperinsulinism, he was referred to the Endocrinology consultation at the reference hospital.

Because of the SARS-CoV-2 pandemic, the patient lost follow-up in april 2020 and he was not called for a hospital consultation for almost 2 years.

In march 2022, he needed to visit the emergency department of the hospital three times due to symptomatic hypoglycemia. Therefore, hospitalization in the Internal Medicine department was proposed for etiological investigation of hypoglycemia, which the patient accepted. From the laboratory study performed, the following results stand out: glucose level of 94 mg/dL; insulin level of 60 µU/mL (5-10 µU/mL); C-peptide level of 1819 pmol/L (364-1655 pmol/L); glucagon level of 113.0 pg/mL (<209 pg/mL). In this

regard, an abdominal CT scan was performed, and the report described "a hypervascular intraparenchymal nodule in the uncinate process of the pancreas, suggestive of a neuroendocrine tumor" (Figure 1). Following this, he was transferred to the General Surgery department of the same hospital center for further guidance.



Figure 1: Abdominal CT scan showing a hypervascular intraparenchymal nodule in the uncinate process of the pancreas (white arrow).

In may 2022, the patient underwent an elective cephalic duodenopancreatectomy. The resected specimen was sent for pathological study, which confirmed a well-differentiated grade I neuroendocrine tumor (mitotic index <2 and proliferative index <2%).

After being discharged from the hospital, the patient needed to return on the same day due to abdominal evisceration. As a result, he underwent surgical correction of the evisceration, with dehiscence of the surgical wound, dehiscence of the aponeurosis, and intimate adhesion of small bowel loops. Considering the characteristics of the evisceration, the surgical team opted not to perform complete closure of the abdominal wall. During the hospitalization in the General Surgery service, the patient underwent 7 days of antibiotic therapy with piperacillin + tazobactam due to inflammatory signs in the abdominal wound.

Furthermore, and due to his high metabolic and surgery risk, it was difficult to control hyperglycemia and he needed insulin therapy. On the 28th day of hospitalization, he was transferred to the local rehabilitation unit.

Currently, the patient continues to be followed up at the hospital level with decompensated diabetes mellitus (HbA1c of 10.9%).

DISCUSSION

There are several causes of hypoglycemia that we should consider when we have with a patient with symptoms of hypoglycemia, such as: hepatic diseases (eg, hepatic failure, cirrhosis), endocrine disorders (eg, pheochromocytoma, Addison disease, insulinoma),

substance abuse (eg, cocaine, ethanol, beta-blockers), hypoglycemic agents (eg, insulin, oral hypoglycemic agents), nutritional disorders (eg, low-calorie ketogenic diet) and autoimmune disorders (eg, Graves disease).²

Insulinoma is an uncommon neuroendocrine tumor, occurring in about 4 thousand cases per 1 million people annually. It originates from the beta cells that ectopically secrete insulin.³ They are generally small in size and only a minority of cases are malignant.³ Despite occurring mostly sporadically, about 5% of cases are associated with multiple endocrine neoplasia type 1.⁴

Although not pathognomonic of insulinomas, the Whipple's triad (fasting-induced hypoglycemia with blood glucose levels <45 mg/dL and rapid resolution of symptoms upon glucose administration) is the best way to suspect the diagnosis of hypoglycemia induced by hyperinsulinism.⁵

The gold-standard exam, which confirms about 98% of insulinoma cases, is the prolonged fasting test, which must be performed in a hospital with repeated measurements of blood glucose and insulin levels for up to 72 hours.⁶ It is also essential to locate the tumor to plan the therapeutic approach. Although non-invasive methods such as ultrasound or CT scan are recommended, these imaging tests have a diagnostic sensitivity between 17% and 64%. Other methods, such as endoscopic ultrasound, are reserved for cases where the CT scan is inconclusive.⁷

The treatment is based on surgical resection, which is usually curative. The choice of surgical technique varies depending on the location and size of the tumor, and options include enucleation, distal pancreatectomy, pancreatoduodenectomy, among others.^{7,8} Surgical complications can occur in about 1/10 of the patients, with the most common being intra-abdominal infections, wound infections, or acute pancreatitis.⁸ It is important to note that after surgical removal of tumor, occurrence of transient hyperglycemia in the first 2-3 days is considered physiological. This is due to a chronic decrease in the number of insulin receptors, which may require subcutaneous insulin administration.⁹ In the long term, the diagnosis of diabetes mellitus may occur, reported in about 30% of cases. This complication has a lower incidence rate in patients undergoing tumor enucleation, as it is related to extent of pancreatic resection.¹⁰

In inoperable cases, therapy with diazoxide, octreotide, or corticosteroids should be considered in order to reduce the symptoms resulting from hypoglycaemia in patients with an adapted food plan.¹¹

CONCLUSION

It is undeniable that the diagnosis of insulinoma is a challenge, requiring a high degree of suspicion. Due to its uncommon nature and symptoms that can be attributed to

other conditions, there is a considerable time gap between the onset of symptoms and the diagnosis.

The purpose of this study is to emphasize the importance of the Family Physician in integrating and interpreting signs and symptoms, which are often nonspecific or disregarded. Not all symptoms can be attributed to poor habits and it is the role of the physician, at the primary healthcare level, to evaluate the patient with a holistic perspective.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Teixeira D, Tavares RF, Rodrigues A. Insulinoma in the primary care: a case report. *Int Surg J* 2023;10:1687-9.