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A Case Report On Pancreatic Insulinoma

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Abstract
Introduction*: An insulinoma is a rare pancreatic endocrine tumor that is typically sporadic, solitary, and less than 2 cm in diameter. Fewer than 5% of insulinomasare larger than 3 cm. Ninety percent or more of all insulinomas are benign.*
Case presentation*: This study reports on a 38-year-old man was admitted with 1 episode of convulsion. The onset of the symptoms was 1 year ago. Initial loboratory testing revealed blood glucose level in30-40 mg/dl. The patient was admitted for further evaluation of hypoglycemia. Blood tests evidenced high insulin and c-peptide levels despite low plasma glucose level.*
Conclusion*: Proper management for timely treatment of a patient with insulinoma involves complex medical teamwork consisting of physicians from various specialties: endocrinology, internal medicine, surgery, pathology, medical imaging, and oncology.*

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I. Introduction

Insulinoma is an adenoma of beta cells of islets of Langerhans of the pancreas, with an incidence of 1–4 per million population per year .

Insulinoma is characterised by Whipple's triad which includes:
1. Symptoms of neuroglycopenia.
2. Hypoglycaemia (plasma glucose level less than 50 mg/dl).
3. Symptoms are relieved within 5 to 10 minutes after oral glucose.

II. Case Presentation

The patient is a 38-year-old male working as a farmer who presented to the casualty with a history of 1 episode of convulsion half hour back lasting for 1 minute

The patient was apparently alright in the morning but had skipped his afternoon meal. He has a history of repeated admissions to hospital for convulsions and hypoglycemia and was on antiepileptics. He has no family history of endocrine or metabolic disorders. He denies the use of alcohol, tobacco, or recreational drugs.

On arrival patient was in post ictal phase. Physical examination revealed blood pressure of 120/76 mmHg, Heart rate 82 bpm, Respiratory rate 16/min, Random blood glucose level was 38 mg/dl. General physical and systemic examination was within normal limits. Patient sensorium and general condition improved after intravenous dextrose administration.

Investigations

Simultaneously, blood investigations were sent from sample taken during time of hypoglycemia which showed, low plasma glucose of 36 mg/dl, elevated insulin of 94.8 mu/l (normal range, 1.7 - 31 mu/l), elevated C-peptide level of 10.6 ng/ml (normal range 0.9-4 ng/ml).

In view of the clinical picture and laboratory data, radiological investigations were ordered.

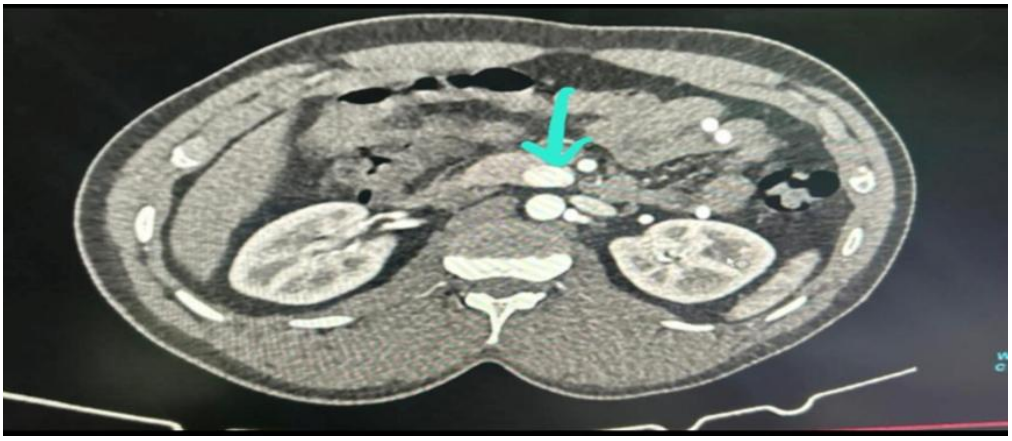

Figure 1: Showing Computed tomographic image: 1.3cm ×1.7cm hyperdense Lesion in body of pancreas in arterial phase.

Radiological investigations

Abdominal ultrasound (US) was normal. A computed tomography of the abdomen and pelvis with contrast using pancreas protocol was done which showed a 1.3 cm×1.7cm hypervascular lesion in the body of pancreas that shows intense enhancement in arterial phase and become isodense with surrounding pancreatic parenchyma in venous phase.

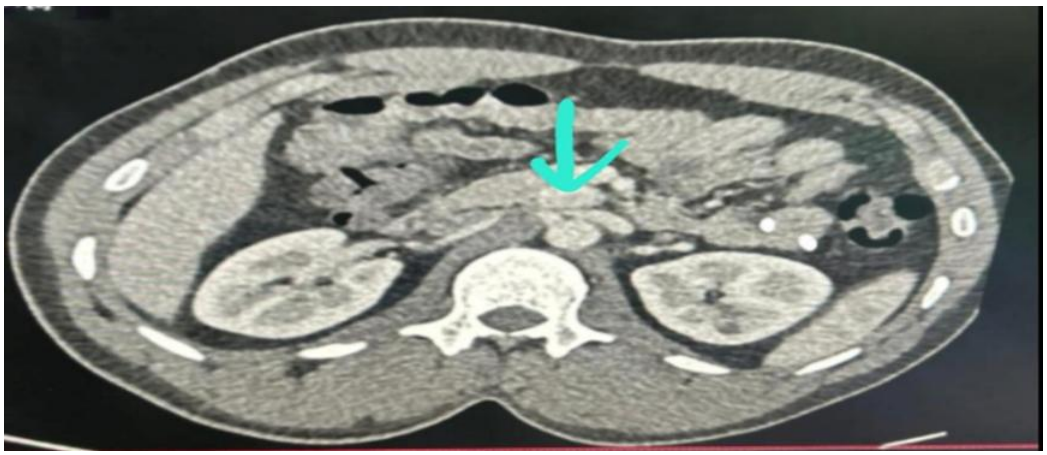

Figure 2: Showing Computed tomographic image: Reduced intensity of the lesion in body of pancreas in portal phase.

Radiological findings with laboratory results were supporting the diagnosis of Neuroendocrine tumor (NET) of pancreas, most likely pancreatic insulinoma.

III. Discussion

Sporadic distribution, small size and high benignity rate are known insulinoma features, however etiopathogenesis remains still unclear. This rare tumor may have variable and nonspecific presentations all referable to the hypoglycemic state.

The supervised 72 h fasting test remains to be the gold standard for biochemical diagnosis with measurement of plasma glucose, insulin, C-peptide, and proinsulin during the onset of hypoglycemic symptoms. Various preoperative procedures can be used to localize the tumor in order to plan therapeutic strategy. The reported sensitivity of conventional CT and MRI for detection of pancreatic insulinoma ranges respectively from 33 to 64 and 40 to 90 %. However, the advent of helical CT scan has enabled detection of about 94% of insulinomas. These modalities can identify the exact size and location of an insulinoma, describe its anatomic relationship to surrounding structures and detect the presence of metastatic lesions suggestive of malignancy. Some authors consider EUS as the best exam for preoperative localization of insulinoma, with a sensitivity of up to 94 %. It can detect even small tumors of 5 mm. However, EUS findings depend largely on the examiner's experience.

Most insulinomas can be cured with surgery. Surgical procedure choice depends on the size and location of the mass. Tumor enucleation is the procedure of choice especially in case of small and solitary nodule that is not encroaching on the pancreatic or bile ducts. In addition, recent guidelines suggest that enucleation is enough in front of a well-circumscribed lesion, clearly localized before surgery, near or at the pancreatic surface, and easily defined intra-operatively. Moreover, pancreatic resection is indicated for lesions invading or in close proximity to the pancreatic duct or major vessels, or suspicious for malignancy with a hard, infiltrating tumor and puckering of the surrounding soft tissue, pancreatic duct dilatation or lymph node involvement. If the tumor is not identified despite a careful surgical exploration with bimanual palpation and IOUS, termination of the surgical procedure without blind resection is recommended. In such cases, the patient should be evaluated and re-operated at a referral center. Consequently, more extensive localization procedures must be applied before reoperation, often including the intra-arterial calcium stimulation test with hepatic venous sampling (IACS-test). This test helps to regionalize the lesion preoperatively with a high detection rate ranging from 94 to 100 %. It may be appropriate when an insulinoma is strongly suspected but all previously described tests are negative.

Furthermore, laparoscopic approach is currently feasible and becomes increasingly reported with good results in selected patients. Histologically, insulinomas are epithelial neoplasms associated with strong and diffuse immunohistochemical expression of neuroendocrine markers such as synaptophysin and chromogranin. Mitotic rate (number of mitoses per 10 HPF) and proliferation index (Ki-67 labeling index) are particularly helpful to separate well-differentiated from poorly differentiated tumors. Conversely, malignant insulinomas are difficult to distinguish histologically and often the diagnosis of malignancy is only made when metastases occur. Medical management of insulinoma, used to treat and prevent hypoglycemia, is generally restricted to unresectable metastatic tumors, unsuccessful operation with persistent symptoms, inoperable patients, and patients awaiting or refusing surgery. Moreover, other recent techniques for the management of insulinoma have been reported, including injection of octreotide, EUS guided alcohol ablation, radiofrequency ablation, or embolization of an insulinoma.

IV. Conclusion

Adult-onset seizures should prompt evaluation for metabolic causes, including insulinoma. Early recognition and surgical resection of insulinoma lead to excellent prognosis and symptom resolution. Proper management for timely treatment of a patient with insulinoma involves complex medical teamwork consisting of physicians from various specialties: endocrinology, internal medicine, surgery, pathology, medical imaging, and oncology.

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