Case Report

Anesthetic management of a patient with insulinoma

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Abstract

Insulinomas are an uncommon cause for recurrent hypoglycemia. Surgical resection is the definitive treatment. We present a case of a36-year-old male patient diagnosed with insulinoma and right parathyroid adenoma who had history of recurrent hypoglycemic attacks and giddiness. Laparoscopic enucleation of the tumor was undertaken. Perioperative management of blood sugar in these patients is of utmost importance. As anesthesiologists, our target is to prevent severe hypoglycemic episodes which may lead to permanent neurological damage and severe hyperglycemia post procedure which has to be managed by titrating the dose of insulin and dextrose

Key Words: insulinoma.

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INTRODUCTION

Insulinomas are rare neuroendocrine tumors with a yearly incidence of 1 in 250,000.1 However, insulinomas are the most common pancreatic endocrine tumors. The most common clinical manifestation is recurrent attacks of hypoglycemia with or without neuroglycopenic symptoms. Surgical resection has always been the treatment of choice since its first detection back in 1924.2 Inoperable tumors, or patients who are not surgical candidates, may be managed on diazoxide or somatostatin analogues like octreotide.3,4 The main challenge in the anesthetic management of an insulinoma is to maintain optimum glucose levels and prevent wide swings in blood glucose perioperatively.

CASE REPORT

A36-year-old male patient presented with recurrent episodes of loss of consciousness and giddiness associated with hypoglycemia since 10 years. Complaints of left flank pain and weight loss since 2 months A diagnosis of MEN 1Syndrome was suspected, which was confirmed with low fasting sugar and CT scan of the abdomen revealed a well-defined enhancing solid lesion measuring 91x85x86mm (CC x TRANS x AP) in size is arising from body of pancreas with small necrotic areas within it. CECT Neck revealing enhancing lesion of size 21 x 32mm noted near lower pole of left lobe of thyroid in paratracheal region. Moderately enhancing lesion noted in right para tracheal region measuring 12 x 8mm. Hypodense cystic lesion of size 17 x 3mm noted in subcutaneous plane in postero spinal region. He was then posted for laparoscopic enucleation of the tumor and distal pancreatectomy. On preoperative evaluation, his vital signs and auscultation are normal.GCS 15/15. His ECG and 2Decho were within normal limits. Blood investigations are Hb-9.2 TLC-24480 Platelet count-2,06,000, LFT- WNL, Serum Vitamin D <8.0 ng/dl, Ionized calcium 1.412 mmol/L, Hb A1c- 5.4, Serum insulin – 9.6IU/ml, C- Peptide – 1.38 ng/ml, Thyroid Profile – WNL, CA-19.9 – 45 U/ml. A written informed consent was taken after explaining the possible need for postoperative mechanical ventilation. He was kept NBM for 6hours prior to surgery and started 10% dextrose at 75ml per hour with one hour monitoring of blood sugars. On shifting the patient to operating room peripheral and right internal jugular vein lines are secured. Electrocardiogram, pulse oximeter, capnometer and NIBP monitoring were set up. Preoxygenation was done for 3

min and premedication was done with midazolam 1 mg, glycopyrolate 0.2 mg, fentanyl 60 mcg. Induction was done with 100 mg of propofol and succinylcholine 100 mg. Intubation was done with an oral cuffed endotracheal tube sized 8.0 mm. He was maintained with atracurium and O2: N2O mixture and 1 % sevoflurane. Blood sugar was recorded once every 30 min until tumor was reached, and every15 min once tumor manipulation was started. Blood sugar ranged between 105 to 180 mg/dl intraoperatively. Intravenous fluids – 25% dextrose or ringer lactate were titrated according to blood sugar.

DISCUSSION

Insulinoma is an adenoma of beta cells of islets of Langerhans and the most common cause of endogenous hyperinsulinism. The median age of presentation is approximately 47 years with a mild female preponderance.[5,6] The tumors are generally small, solitary and benign (90%). Malignant insulinomas may be associated with multiple endocrine neoplasia type-1 (MEN -1) syndrome. Whipple first described the pathognomonic triad of symptoms in 1938, e.g. neuroglycopenic symptoms, documented hypoglycemia (random blood sugar < 60 mg/dl) and relief of symptoms following glucose administration.[7,9] The clinical features include headache, dizziness, seizures, amnesia, confusion due to neuroglycopenia and anxiety, tremors, sweating and palpitations due to adrenergic response to hypoglycemia. The current treatment of choice is laparoscopic resection of the tumor. The main focus of anesthetic management is to prevent hypoglycemia during tumor resection and rebound hyperglycemia after resection. Rebound hyperglycemia, which is usually transient, is expected due to increased levels of anti-insulin hormones like growth factor, glucagon and corticosteroids following tumor resection. The preoperative examination must include a complete neurological evaluation and all neurologic damage thathas occurred due to the hypoglycemic episodes must be documented. Intraoperatively, the signs of hypoglycemia may be masked under the effect of anesthesia. Hence, frequent blood sugar monitoring is extremely vital. Blood sugar monitoring must continue in the postoperative period until normalization of sugar which may take several hours to days. Hypoglycemia in the postoperative period must make one consider the possibility of residual tumor or multiple insulinomas. Hyperglycemia following surgery may warrant insulin therapy. The use of an artificial pancreas has been advocated but its use is limited by its cost.

CONCLUSION

Although surgical resection of insulinomas is the definitive treatment, meticulous management of perioperative sugar plays a key role in preventing permanent neurological damage and overall outcome of the patient. We reinforce the need for frequent glucose monitoring and prompt administration of sufficient glucose or insulin therapy as required perioperatively.

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