Letters to Editor

Anesthetic management of insulinoma

Sir,

Insulinoma is a rare tumor of beta pancreatic cells with an incidence of 1-4/million.\[1\] Whipple’s triad, which is pathognomic of insulinoma, consists of recurrent hypoglycemic symptoms, plasma glucose <50 mg/dl and relief of symptoms following glucose administration.\[2\]

A 49-year-old female weighing 60 kg presented with history of recurrent attacks of loss of consciousness. Her blood glucose was 51 mg/dl. Despite 10% dextrose infusion her glucose levels remained between 40 and 50 mg/dl. She was put on intravenous (IV) 20% dextrose at 50 ml/h. Low-blood glucose level raised suspicion of a possible insulinoma for which she was evaluated. Her HbA1c was 4.1% (normal, 4.5-6%), serum insulin level was 12 mcIU/ml (normal 2.25 mcIU/ml) and C Peptide level was 1.6 ng/ml (normal, 0.9-7.1 ng/ml). Magnetic resonance imaging of the...
abdomen showed 9 mm × 7 mm lesion in the uncinate process of the pancreas. Patient was posted for surgical enucleation of insulinoma.

The patient was allowed to have dinner at 10 p.m. the day prior to surgery. IV 5% dextrose normal saline (DNS) was started at 100 ml/h and blood glucose was monitored every 4 hourly. Sedatives were avoided so as not to mask early symptoms of hypoglycemia. Her morning blood glucose was 98 mg/dl. Right internal jugular vein and arterial line was cannulated after induction of anesthesia with propofol, fentanyl and atracurium. The anesthetic plan was aimed to maintain normotension, normocapnia, central venous pressure of 8-10 cm of water and glucose around 100-150 mg/dl. Blood glucose was checked every 30 min by glucostix. In addition to fluid replacement with crystalloid, IV 25% dextrose was infused intraoperatively at 50 ml/h till resection of the tumor. After resection infusion of DNS 100 ml/h was substituted. A nodular lesion of 0.5 cm × 0.6 cm was excised from the uncinate process of the pancreas. Her intraoperative course was uneventful. She had a smooth recovery. IV DNS at 100 ml/h was continued postoperatively for 2 days. On the 3rd day, it was tapered to 50 ml/h. In the postoperative period, her glucose level was monitored every 4 hourly for first 3 days which remained between 100 and 180 mg/dl with no episode of hypoglycemia. Histopathology confirmed adenoma of pancreatic cells.

The definitive treatment for adenoma is surgical enucleation of adenoma. Malignant tumor requires combined medical and surgical management. Medical management includes diazoxide and somatostatin, which blocks the release of insulin and thus has to be continued till day of surgery. General anesthesia is an ideal technique as it reduces the cerebral metabolism and oxygen consumption. But the lack of awareness will mask the symptoms of hypoglycemia. Signs of hypoglycemia may be mistaken as lighter plane of anesthesia or hypovolemia. The only diagnostic sign of hypoglycemia is low-glucose levels which necessitate frequent blood glucose monitoring. There is a tendency for hypoglycemia until tumor resection and rebound hyperglycemia after resection. Complete removal of insulinoma can be reliably predicted using rapid insulin assay and is more reliable than determining glucose intraoperatively. The insulin level returns to normal within 20 min. Intraoperative ultrasound is helpful to localize small tumors. Handling of tumor can cause a surge in insulin levels. Use of the artificial pancreas has been described to monitor blood glucose continuously and to maintain normoglycemia by delivering glucose or insulin. However, its use is limited by its cost and complexity.

In this patient, insulinoma was confirmed histopathologically and by absence of hypoglycemia after surgery.