Article of Special Interest

ANAESTHETIC MANAGEMENT FOR HAND ASSISTED LAPAROSCOPIC ENUCLEATION OF PANCREATIC INSULINOMA

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INTRODUCTION:

Insulinoma is a rare tumour of the islet cells of the pancreas and was first described by Harris [1] in 1924. The incidence is 1– 4 per million and male to female ratio is 2:3. The average age of presentation of the disease is fifth decade [2]. They are typically sporadic, solitary and less than 2cm in diameter. About 90% of Insulinoma are benign and approximately 10% are malignant. These tumors produce large amounts of insulin which lowers blood glucose level opposite the diabetes mellitus.

Patients with Insulinoma usually develop neuroglycopenia and sympathoadrenal symptoms; these include hypoglycemia, recurrent headache, lethargy, Diplopia and blurred vision particularly with exercise or fasting. Severe hypoglycemia may result in seizures, coma and permanent neurological damage. Weight gain occurs in 20 - 40% of patients. Insulinoma are characterized clinically by the Whipple triad of episodic hypoglycemia, CNS dysfunction temporally related to hypoglycemia and dramatic reversal of CNS abnormalities by glucose administration.

Medications such as diazoxide and somatostatin can be used to block the release of insulin for patients who are not surgical candidates or who otherwise have inoperable tumour. The definitive treatment is surgical removal of the adenoma or either subtotal or total pancreatectomy. Most patients with benign Insulinoma can be cured with surgery [3]. Laparoscopic approach has been applied in the management of patients with pancreatic disease. In this patient pancreatic insulinoma was successfully enucleated by laparoscope. Persistent or recurrent hypoglycemia after surgery tends to occur in patients with multiple tumors. About 2% of patients develop diabetes mellitus after surgery.

In this report, we describe the anaesthetic management of a patient with pancreatic Insulinoma enucleated laparoscopicaly.

CASE REPORT:

A 32-year old male weighing 71kg was admitted to the Hepatobiliary and Pancreatic Surgery unit, Department of Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh on January 13, 2008 with the history of repeated attack of headache, vomiting, restlessness, convulsion and unconsciousness several times in three and half years. The frequency of above episodes was typically occurs in the morning. Over the last six to eight

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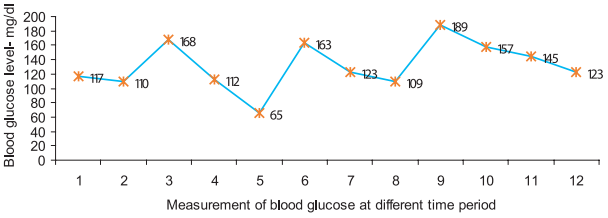
months the episodes were increasing in frequency and occurred in throughout the day. The patient was admitted to the Department of Neurology for further evaluation. His haemodynamic status was normal, ECG, EEG finding were also normal. His plasma fasting insulin level was 48.2µU/ml (reference value- 2-25µU/ml) and plasma fasting glucose 0.7mmol/L. With the help of biochemical test, USG, CT scan and MRI it was diagnosed as a case of Insulinoma is the region of head of the pancreas measuring of 2×1.5 cm.

ANAESTHETIC MANAGEMENT

After pre-anaesthetic evaluation and optimization of patient was scheduled for elective surgery for hand assisted laparoscopic enucleation of Insulinoma on 2nd February 2008. The patient was allowed to take dinner at 10.00 pm day before operation. Intravenous infusion of 10% Dextrose in aqua started @ 30 drops per minute from 12:00 midnight. Patient arrived at operation theatre at 8.00 am. Fasting blood sugar was done and 10% Dextrose in aqua continued @ 30 drops per minute up to thirty minutes of removal of the tumour. Rapid infusion of 150ml of 10% Dextrose in Aqua during the handling of the tumour and thereafter it was stopped. Another IV channel established with 18G cannula and Hartman's solution started @ 10 drops per minute. Premedication was done with 5mg diazepam at night and 5mg diazepam in the morning. After pre-oxygenation for three minutes, induction of anaesthesia was done with Inj. Propofol and tracheal intubation with succinylcholine. Maintenance of anaesthesia was done with O_2, N_2O, Halothane, Inj. Fentanyl and Inj Vecuronium. Monitoring was done with pulse, NIBP, SpO2, ECG, urine output and capillary blood glucose every 30 minute keeping short acting insulin ready for emergency use.

At the end of the surgery, the residual effect of vecuronium was reversed with Inj. neostigmine bromide 2.5mg and Inj. atropine sulphate 1.2mg. Patient was extubated smoothly after fulfilling the extubation criteria. Post-operative analgesia was ensured with IM pethidine hydrochloride 100 mg stat and per rectal diclofenac 50mg twice daily. With stable vital signs and SpO_2 patient was transferred to High Dependency Unit. Propped up position with 4 L O_2 by face mask was instituted for first 3 hour of postoperative period. Postoperative fluid was 1000 ml of 5% dextrose in aqua, 1000ml of 5% dextrose in normal saline and 1000ml of Hartmann solution @ 30 drops per minute in the first postoperative day. At the HDU monitoring of heart rate, noninvasive blood pressure, SpO2, urine output and capillary blood glucose every 2 hourly continued. Patient was shifted to surgical ward after 24 hours of surgery and advised to continue measuring of blood glucose level two hourly for another 48 hours and then three time daily for whole postoperative period.

Total duration of anaesthesia was 270 minutes and total duration of operation was 210 minutes. Histological examination of the dissected specimen disclosed as pancreatic endocrine neoplasm. The patient was discharged from the hospital after 10 days of operation.



1. Pre-operative night
2. In the morning
3. Before induction
4. Before Enucleation
5. During Enucleation
6. After Enucleation
7. Before Reversal
8. After extubation
9. 2 hrs after extubation
10. First postoperative day
11. 2nd postoperative day
12. 3rd postoperative day

Fig 1: *Blood glucose level at different time interval*

DISCUSSION:

The maintenance of peri-operative adequate blood glucose level is the primary importance in the anaesthetic management of a patient of Insulinoma. The patient can go into hypoglycaemic attacks during perioperative period if glucose is withheld over a long period of time or the patients are kept fasting for a long period. Hargadon and Ormston reviewed the effect of glucose deprivation on blood glucose level in their study and confirmed the above statement [4]. Now a day's perioperative maintenance of near normal glucose level is possible by frequent measurement of capillary blood glucose level in the operating theatre. Adezati has been suggested perioperative steroid therapy during Insulinoma surgery in the view of adrenocortical suppression [5]. But its value is doubtful and sometimes it may be

harmful. Corticosteroid therapy may leads to hyperglycemia in the postoperative period and there is an increase chance of infection. Pramila Chari et al advocated use of bolus corticosteroid in their case report [6]. In our case, we avoid use of steroid in the view of promoting infection and could produce unnecessary hyperglycemia. On the other hand it took 10-12 days for the blood glucose level to come within normal limit. During the course insulin requires rarely.

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