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Preoperative Epidural Infusion for Blood Pressure Control in Phaeochromocytoma

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Introduction

The 2004 World Health Organization (WHO) classification of endocrine tumours defines phaeochromocytoma as a catecholamine-producing intra-adrenal tumour arising from the chromaffin cells. The most important functional characteristics of the adrenal and extra-adrenal sympathetic tissue derived tumours is the production of various types of catecholamines and the related clinical attributes [1]. Preoperative blood pressure control in phaeochromocytoma is an uphill task using multiple medications leading to post operative hypotension. It is well known that complete prevention of perioperative hypertension and tachycardia cannot be achieved by any dose or combination of drugs. Epidural anesthesia is often used for pain control in open resection of these tumours; one of its side effects is hypotension [2]. We describe here a case of phaeochromocytoma in whom perioperative blood pressure control was achieved with the help of epidural drugs instead of systemic antihypertensive medications.

Case presentation

A 38 year old female, with height 160 cm and weight 55 kg diagnosed with phaeochromocytoma of the right adrenal gland was scheduled for open adrenalectomy. We placed an 18 gauge epidural catheter 48 hours prior to surgery at L1-L2 interspace (3 cm inside) in the patient.

The patient was monitored preoperatively in the intensive care unit and an epidural infusion of 0.0625% bupivacaine at the rate of 2 ml per hour was started. Adequate control of blood pressure around 130/80 mmHg was achieved. The epidural infusion was stopped when the patient was shifted to the operation theatre in the morning on the day of surgery.

Surgery was performed under general anaesthesia technique with all adequate intraoperative monitoring including pulse oximetry, non-invasive blood pressure monitoring, monitoring of 5-lead electrocardiogram, central venous pressure and invasive arterial blood pressure. General anaesthesia was induced with intravenous (IV) fentanyl 2 µg/kg, midazolam 0.5 mg/kg, propofol 2 mg/kg, succinylcholine 2 mg/kg, intubated and maintained with a mixture of oxygen, nitrous oxide sevoflurane 2%. Blood pressure was streamlined using simultaneous nitroglycerine/propofol/epidural infusions of 0.0625% bupivacaine at the rate of 2 ml per hour. The patient was not reversed on table at the end of the surgery and was shifted to the intensive care unit with stable haemodynamics and extubated after 3 hours. Hypotension was noted 6 hours post operatively and was managed with IV noradrenaline of strength of 0.1 µg/kg/min at a rate of 3 ml per hour and was gradually tapered and stopped within 12 hours of postoperatively in accordance with blood pressure recordings. On post operative day 2, haemodynamic stability was achieved and the patient was shifted to the ward.

We thus achieved adequate preoperative blood pressure control with no untoward complications intra and postoperatively.

Discussion

The drugs traditionally used to control blood pressure in phaeochromocytoma are alpha blockers like phenoxybenzamine, prazosin and terazosin [3]. However, these drugs are associated with persistent post-operative hypotension, tachycardia, headache and nasal stuffiness. A preoperative blood pressure of 120-130/80 mmHg in the sitting position 24-48 hours before surgery is usually the goal. Nevertheless, we could achieve this with the epidural local anaesthetic infusion. Intraoperative hae-

modynamic concerns include hypertensive crisis secondary to tracheal intubation/anaesthetic agents/initiation of pneumoperitoneum/gland manipulation, hypotensive episodes after ligation of the adrenal vein and cardiac tachyarrhythmias [3]. The long-drawn process of achieving adequate blood pressure control using polypharmacy can be avoided with an epidural infusion which adequately controls the blood pressure. Epidural local anaesthetics are also associated with reduction in intraoperative surgical blood loss which can be an added advantage. However, we did not continue the epidural local anaesthetic infusion intraoperatively and postoperatively because we wanted to avoid the occurrence of precipitous hypotension. Postoperatively, profound hypotension can occur due to hypovolaemia and vasodilation [3]. In our patient, hypotension was noted 6 hours post operatively and was managed with IV noradrenaline 0.1 µg/kg/min at a rate of 3 ml per hour.

Conclusion

Perioperative blood pressure control can be achieved with the help of preoperative epidural infusion of drugs instead of systemic antihypertensive medications in a case of surgical resection of a phaeochromocytoma.

Further research is needed on this intervention. We believe that early involvement of an anaesthesiologist in such a case can deliver better outcomes.

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