

Anaesthetic management of a case of adrenal and extra-adrenal phaeochromocytoma for preoperative embolisation

Sir,

A 40-year-old asymptomatic patient was found to have a blood pressure (BP) of 170/110 mmHg during routine medical examination. His systemic examination was essentially normal and routine investigations did not reveal any abnormality. However, his 24 h urine normetanephrine levels were elevated to 1977.37 µg/g of creatinine (normal: 46–256 µg/g). Magnetic resonance imaging of the abdomen showed right adrenal, superior mesenteric and left paraaortic phaeochromocytoma. Biochemical screening for multiple endocrine neoplasia was negative. Antihypertensive drugs were used to manage hypertension and to prepare the patient for surgery; the patient was started on oral amlodipine 5 mg once daily, prazosin 5 mg once daily and carvedilol 25 mg twice daily and continued for 4 months while embolisation of tumour was planned to reduce vascularity before surgery.

The technique of anaesthesia decided upon was sedation with monitored anaesthesia care. On the day of the procedure, patient was shifted to interventional radiology centre. A valid informed consent was obtained. All emergency equipments and drugs, including those required for general anaesthesia were checked and kept ready. Standard monitoring including pulse oximetry (SpO₂), electrocardiogram (ECG) and non-invasive BP were applied. Baseline BP recorded was 120/80 mmHg with heart rate (HR) 64/min and ECG monitor showed normal sinus rhythm.

Vasoactive drugs like sodium nitroprusside (SNP), nitroglycerin (NTG), noradrenaline and dopamine were kept ready and loaded in syringes in infusion pumps. A large bore 16 gauge intravenous (IV) cannula was inserted in left upper limb under local anaesthesia. Premedication consisted of ondansetron 4 mg, midazolam 2 mg and fentanyl 100 µg, all IV. Oxygen was started at 5 L/min through a facemask.

The right radial artery was cannulated using a 20 gauge arterial catheter, and right subclavian vein was cannulated with a 7.5 French triple-lumen central venous

catheter under strict asepsis under local anaesthesia. A baseline infusion of SNP was started at 0.3 µg/kg/min. Right femoral artery was cannulated by the radiologist under local anaesthesia using 5 F femoral sheath. Flush aortogram was done and selective catheterisation and polyvinyl alcohol embolisation done in the right middle and inferior suprarenal and bilateral lumbar arteries at L1 level. Coils were placed in branches of left lumbar and paravertebral branch of middle suprarenal artery.

After embolisation of main feeding vessel of tumour, BP rose to 172/110 mmHg with a drop in HR to 44/min. SNP infusion was increased stepwise till 1.2 µg/kg/min and NTG was started at 1.5 µg/kg/min. Both infusions were carefully titrated to maintain BP of 140/90 mmHg. Blood sugar levels were checked and were found to be 46 mg/dl and 50 ml of 50% dextrose was administered. The blood sugar value was checked 1/2 hourly thereafter during the procedure, which were normal. Arterial blood gas analyses obtained during the procedure were normal. Intraoperative central venous pressure (CVP) was maintained at 10 cm of water. Ringer's lactate, 2.5 L was infused during the procedure. Total duration of procedure was 3 h. Once procedure was over, patient was shifted to the Intensive Care Unit (ICU) under close monitoring where SNP and NTG were tapered down slowly. Patient was then closely monitored for hypotension and hypoglycaemia. Throughout ICU stay BP remained 130/90 mmHg with a HR of 80–90/min. He was taken up for laparotomic excision of the tumour next day.

Previous reports have described the use of transcatheter arterial embolisation (TAE) in patients with phaeochromocytoma. Pre-operative embolisation in both adrenal and extra-adrenal location^[1] has been shown to reduce the risk of catecholamines release during manipulation of the tumour at the time of surgery. Treatment of malignant phaeochromocytoma^[2] or its metastatic lesions,^[3] particularly liver metastasis has been performed too with TAE.

Marked decrease in circulating levels of catecholamines following TAE may be associated with lower risks of haemodynamic fluctuations during surgical manipulation of the tumour and in the post-operative period. Hence, TAE may have an important role in the pre-operative management of large adrenal and extra-adrenal pheochromocytomas.^[4,5] There are many anaesthetic choices available for this procedure. It can be performed under sedation with monitored anaesthesia care as in our case.^[6] It can also be performed using supraglottic airway devices with

general anaesthesia with spontaneous ventilation. Epidural anaesthesia can alleviate ischaemic pain after TAE of tumour, after ensuring stringent haemodynamic monitoring. Irrespective of the type of technique, it is useful to have invasive monitoring, including intra-aortic balloon pump and CVP so as to have constant haemodynamic monitoring, which is of prime importance in such a case.

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