

CASE REPORTS

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Laparoscopic large adrenal mass resection: why we should be more careful?

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Abstract

Background: Pheochromocytoma is a rare tumor originating from the adrenal medulla, and surgical removal is the main treatment. We report a case of large size pheochromocytoma that was removed laparoscopically without preoperative blockade of alfa adrenergic receptors.

Case presentation: A 58-y-old woman was referred to our center with incidentally found 7 cm right adrenal mass. She did not have any history of hypercatecholamine state, and 24 h urine test for catecholamine metabolites was in normal range; we thought there is no need for preoperative catecholamine blockade. She was scheduled for laparoscopic mass resection, and during the operation, there was no significant bleeding and no major hypertension or hypotension crisis. The final pathology report was pheochromocytoma.

Conclusion: As the catecholamine release of pheochromocytoma may be periodic and inconsistent, the preoperative test should be repeated especially for large adrenal tumors.

Keywords: Pheochromocytoma, Laparoscopy, Catecholamine blockade

1 Background

Pheochromocytoma is a rare tumor originating from the adrenal medulla, and surgical removal is the main treatment [1].

Since it was first performed in 1992 [2], laparoscopy has clearly become the procedure of choice for the removal of most functioning and nonfunctioning adrenal tumors including pheochromocytoma.

One important thing in the management of pheochromocytoma is trying to control hemodynamic instability during surgery because of the sudden release of large amount of catecholamines into the circulation causing hypertension crisis or hypovolemia due to severe vasoconstriction after tumor removal.

To prevent such hemodynamic crisis, the general recommendation based on observational studies and expert

opinion is that all patients with pheochromocytoma or sympathetic paraganglioma should undergo a perioperative treatment with α -receptor blockers to control symptoms of catecholamine excess and blood pressure [3–6].

There are no randomized placebo-controlled trials on this subject. This lack of robust evidence has led several investigators to question the recommended practice of presurgical treatment with α -adrenergic receptor blockers, and some articles reported pheochromocytoma surgery without preop adrenergic blockade.

Groeben H et al., in a case series of 110 patients with and 166 without α -receptor blockade before pheochromocytoma surgery, reported no difference in the incidence of excessive hypertensive episodes between groups [6].

G Gonzo et al. demonstrated that preoperative adrenergic blockade did not prevent severe intraoperative hypertension and that prolonged periods of preparation were not more effective in preventing intraoperative tachycardia and ventricular arrhythmias [7].

AZMY R. BOUTROS et al. in their case series of 60 patients with 29 of them not receiving preoperative

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blockade concluded that advances in anesthetic and monitoring techniques and the availability of fast-acting drugs capable of correcting sudden changes in cardiovascular variables and parameters have eliminated the need for the use of POB or other drugs to produce profound and long-lasting alpha blockade in preparing pheochromocytoma patients for the surgical removal of the tumor [8].

We report a case of large size pheochromocytoma that was removed laparoscopically without preoperative blockade of alfa adrenergic receptors.

2 Case presentation

A 58-y-old woman was referred to our center with incidentally found 7 cm right adrenal mass (Fig. 1).

She did not have any history of hypertension, palpitation or any other significant comorbidity.

24 h urine test for catecholamine metabolites was in normal range. Endocrinology consultation was requested which suggested that “due to lab tests and patients’ normal blood pressure, there is no need for preoperative catecholamine blockade”.

She was scheduled for laparoscopic mass resection but due to probability of vena cava involvement, the contrivance and an experienced vascular surgeon were available in operating room in case of need for conversion to open surgery.

During the operation, mass was separated from vena cava, liver and right kidney and there was no significant bleeding and no major hypertension or hypotension crisis (Figs. 2 and 3).

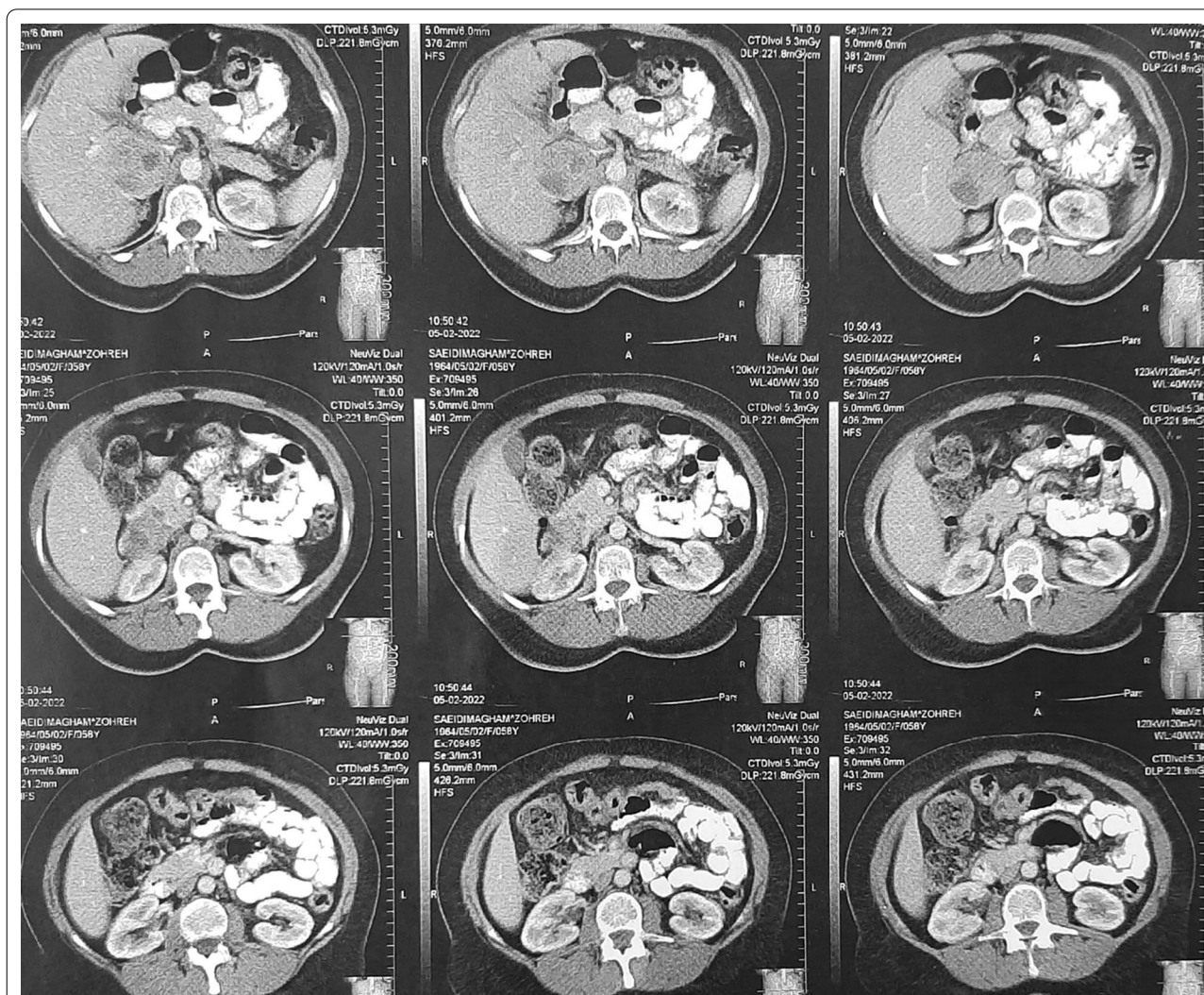


Fig. 1 Large nonfunctional adrenal mass in 58-y-old woman

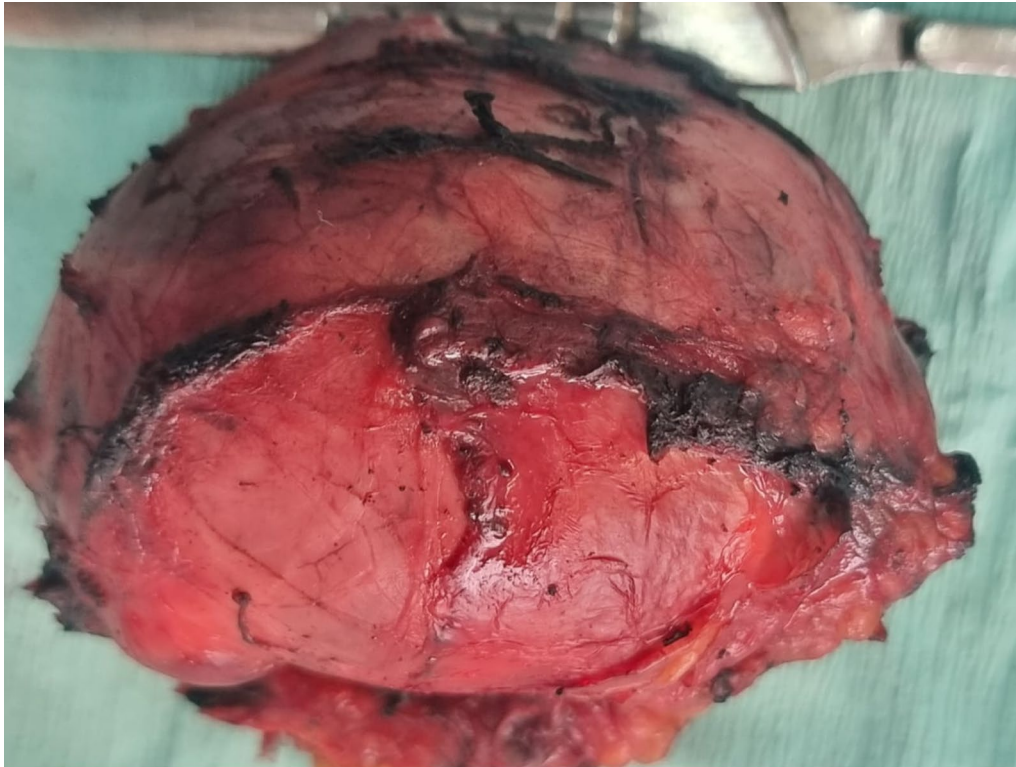


Fig. 2 Large adrenal mass removed laparoscopically



Fig. 3 visual representation of trocar sites. Mass was extracted from extended camera trocar site

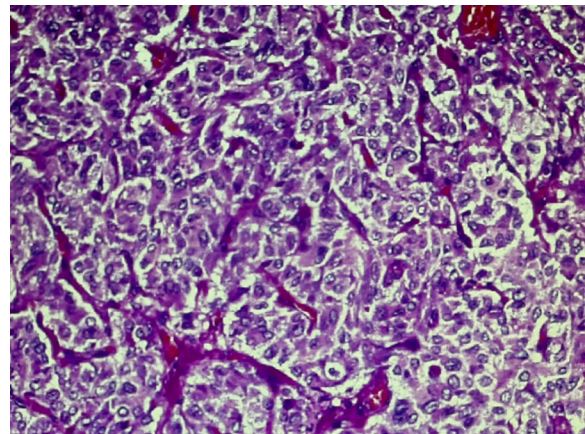


Fig. 4 pathology consistent with pheochromocytoma; sheets of cells with uniform nuclei

Patients perioperative and postoperative periods were uneventful, and she was discharged 2 days after surgery.

To our astonishment, the final pathology report was pheochromocytoma. The paraffin blocks were

reexamined by special staining on our request, and the same pathology was confirmed (Fig. 4).

Whether the preoperative 24 h urine test for catecholamine metabolites was accurate or not, we are very grateful for not having a crisis during the surgery and took a great lesson.

3 Conclusion

As the catecholamine release of pheochromocytoma may be periodic and inconsistent, the preoperative test should be repeated especially for large adrenal tumors.

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Author contributions

MV was involved in diagnosis, admission and surgical operation of the patient. MP was involved in pathology diagnosis and reexamination of pathology sections. HAG was involved in surgical operation and writing of the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

The information and medical data of the patient are available in medical record department of Khanevade Hospital.

Declarations

Ethics approval and consent to participate

The treatment was according to the usual ethical policy of our center. Informed consent was obtained from the patient prior to surgery according to ethical policy of our medical center, and all the possible complications of the operation were explained to her.

Consent for publication

In follow-up visit of the patient, informed consent was obtained for case report publication.

Competing interests

Authors have nothing to disclose.

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