

Case Report

A rare case of extra adrenal retroperitoneal paraganglioma: case report

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Received: 14 February 2024

Revised: 13 March 2024

Accepted: 18 March 2024

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ABSTRACT

Extra adrenal retroperitoneal paragangliomas are neuro endocrine neoplasms with extremely rare incidence and a wide plethora of clinical presentations. They originate from the neural crest cells interspersed throughout the body. They can present with vague symptoms of pain abdomen, hypertension, palpitations and in severe cases with renal failure, and shock owing to catecholamine excess. On the other end of the spectrum they can be totally asymptomatic and detected incidentally. The multitude of clinical presentations and lack of specific diagnostic tests hence pose a great difficulty in the pre-operative diagnosis of the disease. We are presenting a case of a 20-year-old female with vague symptoms to highlight the management and clinical diagnosis of extra adrenal retroperitoneal paraganglioma.

Keywords: Extra adrenal retroperitoneal paraganglioma, Catecholamine excess, Retroperitoneal paraganglioma, Endocrine neoplasm

INTRODUCTION

Extra adrenal paragangliomas are pheochromocytomas or adrenaline producing tumor that grow outside of the adrenal gland. Pheochromocytomas originate from the core of the adrenal gland whereas the paragangliomas originate from the ganglia or neural crest cells mainly the paraganglioma of the sympathetic nervous system. They are extremely rare and their incidence has been recorded to be 2-8 per million.² They are composed of mostly the chromaffin cells. These tumors have been found to be located symmetrically along the para aortic sympathetic chain. In 95% of the cases, these paragangliomas are located in the abdomen. Their incidence has although been recorded in the head, neck and thoracic regions.

The clinical features can range from anything starting with purely a symptomatic incidental cases to cases with severe presentation owing to catecholamine excess. The symptoms like palpitations, headache, profuse sweating, hypertension refractory to treatment are due to the excess

secretion of catecholamines from the chromaffin cells. Paragangliomas have a higher tendency to undergo malignant transformation as compared to pheochromocytomas.

The varied symptoms at presentation, lack of clinical suspicion and lack of definitive diagnostic tools makes this disease difficult to diagnose. For a conclusive diagnosis a detailed medical and surgical history aided by biochemical and radiological parameters is a must in these cases.

In this article we are presenting a case of an extra adrenal retroperitoneal paraganglioma in a 20-year-old female with vague clinical presentation and the laparoscopic surgical treatment of the same to highlight the importance of a strong clinical suspicion in evaluating these cases.

CASE REPORT

A 20-year-old female presented to the hospital with complaints of multiple episodes of fever, palpitations and

acid reflux since the last 3 months. She had no associated history of chills or diurnal variation of temperature. No history of body aches or sweating. She gave a history of recurrent palpitations and anxiety attacks which were associated with a high blood pressure recordings during the episodes. Examination revealed a well-nourished young female in a stable hemodynamic condition. She was afebrile, anicteric, not pale or dehydrated. She had stable vitals. On per abdomen examination, she was found to have a soft, non-tender, non-distended abdomen with normal bowel sounds.

She was admitted and on ultrasonography of the abdomen was found to have a round, well defined, heterogeneously hypoechoic lesion measuring approximately 3×3 cm in left para-aortic location with few tiny eccentric hypoechoic areas within the. The lesion showed peripheral and minimal arterial vascularity.

Her urine VMA was 11.2 mg/24 hours (↑). 2D echo was done and showed global AV hypokinesia with EF of 25%. Contrast enhanced computed tomography (CECT) (whole abdomen) showed a well-defined, significantly and mildly heterogeneously enhancing soft tissue mass lesion measuring 3.4×3.4 cm in mesentery or pre-aortic location at L1-L2 level with extensions.

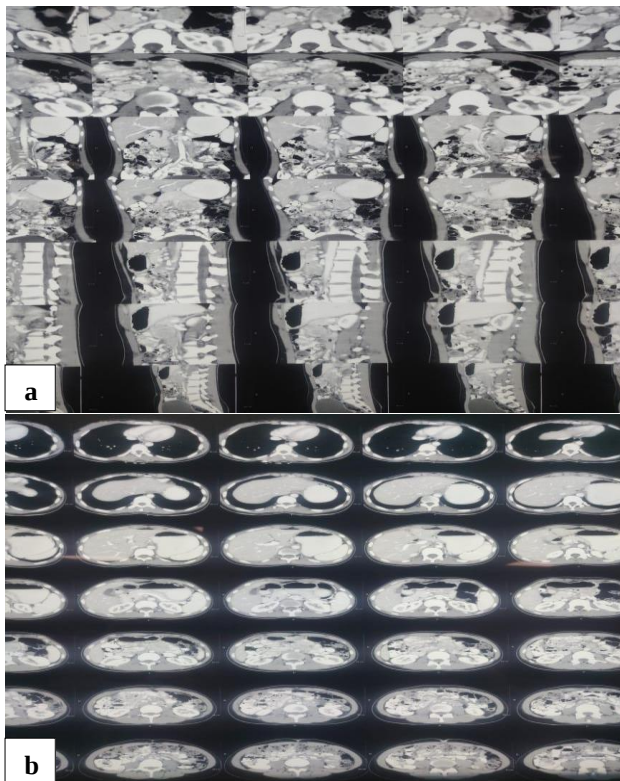


Figure 1 (a and b): CECT abdomen showed a well-defined enhancing soft tissue mass lesion about 3.4×3.4 cm seen at L1 to L2 level in pre-aortic location.

She was taken up for complete laparoscopic excision of the mass post two weeks of alpha adrenergic blockade. Intra

operatively a well-defined globular mass, protruding from the lesser sac was visualized. We divided the lesser sac, dissected out the mass using harmonic scalpel and removed the mass in-toto. While handling the mass there was high fluctuation of blood pressure. The BP had significantly dropped once the mass was extracted out.

Patient was kept under ICU care on ventilatory support due to fluctuations in blood pressure intra operatively. She was weaned off from ventilator support on the first post op day. Following this the patient recovered well and was discharged on post op day 4 with no complaints.

Patient was serially followed up for a year and has been doing well on her regular follow ups.



Figure 2: Intra-operatively visualized mass.



Figure 3: Completely excised globular mass protruding from the lesser.

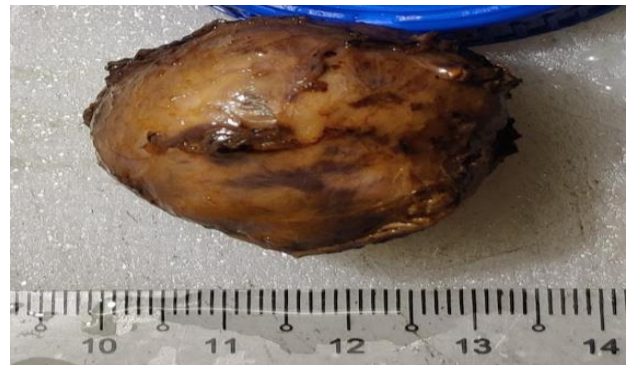


Figure 4: Gross-globular soft tissue piece.



Figure 5: Cut section friable yellowish areas measuring 3.5×3×1.5 cm.

Histopathology report showed no malignancy with strong positivity to chromogranin A and S100 suggestive of neuroendocrine origin of the tumour.

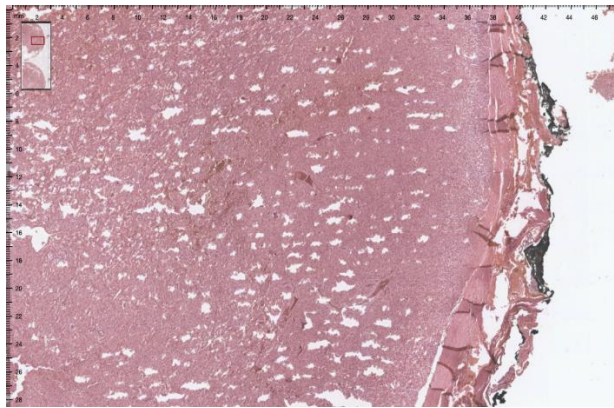


Figure 6: 2X- well encapsulated lesion composed of clusters, nests (zellballen pattern) and sheaths of round to oval to polygonal chief cells separated by prominent fibrovascular stroma.

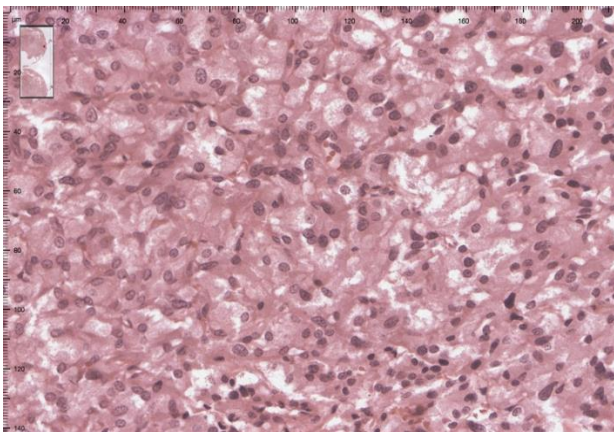


Figure 7: 4X- cells are large with small round nuclei, having stippled chromatin, inconspicuous nucleoli and abundant granular eosinophilic cytoplasm with vacuolation.

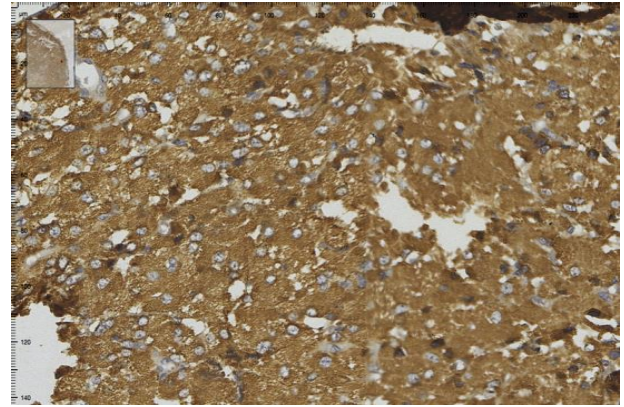


Figure 8: Chromogranin staining with S100 nuclear and cytoplasmic positivity.

DISCUSSION

Paragangliomas are seen within the adrenal medulla giving rise to pheochromocytoma and only 10% of paragangliomas arise outside the adrenal glands. Majority of the prgangliomas are known to occur in specific locations like carotid body, jugular foramen, middle ear, aortico-pulmonary region, posterior mediastinum and abdominal para aortic region including the Zuckerkandl's body or aortic body. Approximately 10-15% of the paraganglioma are non-functional which pose a great diagnostic challenge. They often present with local invasion and can be associated with a high incidence of local recurrence.⁵ They can be functional with symptomatology of paroxysmal hypertension, palpitation, headache, sweating since the chromaffin cells store and release catecholamines which can cause the aforementioned symptoms.² They can be multicentric or unicentric with a tendency to be locally invasive, hence a thorough evaluation is needed to rule out multicentricity. Extra-adrenal retroperitoneal PGLs have a more aggressive course as compared to the adrenal pheochromocytomas.¹¹

It is often difficult to make a clinical diagnosis owing to multitude of factors like the rarity of the disease, lack of availability of a definite pre-operative diagnosis especially in a non-functional tumour. Primary methods of pre-operative diagnosis include imaging techniques which also help in surgical planning and pre-operative preparation.² Computed tomography (CT), magnetic resonance imaging (MRI) or ultrasonography (USG) are capable of detecting a retroperitoneal mass. A meticulous pre-operative and surgical planning is important to prevent intra and post-operative complications of catecholamine surge. In our case the CECT reports showed a well-defined enhancing soft tissue mass in the para aortic region. Urine VMA samples were sent due to clinical and radiological suspicion of a paraganglioma and were found to be 11.2 mg/24 hours which further led to the provisional diagnosis of an extra adrenal paraganglioma. Hence, an anticipated catecholamine surge or hypertensive crisis were prepared for. Intra-operative high blood pressure fluctuations were

swiftly managed in the present case owing to a pre-operative planning.

As described by Ji et al, that surgical resection of the tumor in paraganglioma is the best option and is also associated with a higher survival rate.¹² Our patient underwent laparoscopic in toto resection of the tumor mass. Although difficult, due to the high vascularity and proximity to major vessels, complete resection of the tumor remains as the mainstay for treatment. A laparoscopic approach gave us a wider surgical field while working around the major vessels. In addition to this, hypertensive crisis and hypotension can occur in the intra operative period as was also seen in our case. Non selective beta blockers, calcium channel blockers, alpha blockers can be administered in the pre-operative period to prevent the catecholamine release. Our patient received pre-operative alpha blockers for two weeks. She had intra operative hypertensive crisis which was managed and patient was discharged in a stable condition on post-operative day 4 with no complaints.

Sclafani et al concluded that patients in whom a complete surgical dissection was possible had a better overall survival than patients in whom it was not.¹⁰ In our case post complete surgical resection, the patient fared well on follow up visits and was tumor free on the follow up scans. There were no signs of local invasion or distant metastasis on the follow ups.

The complete diagnosis of the retroperitoneal mass still relies on the postoperative histopathological results, as was evident in our case, as well. Along with central necrosis, lymphatic invasion, vascular involvement and abnormal mitosis; chromogranin A, vimentin, S-100, synaptophysin can be used in the immunohistochemical analysis of paragangliomas to indicate the true nature of the tumour.³ They can be uni or multicentric with a tendency.

Lack et al described the histo pathological slide of a paraganglioma as highly vascular with chief cells and sustentacular cells arranged in clusters called Zellballen pattern. The chief cells were often positive for neuroendocrine markers (synaptophysin, NSE, chromogranin) on immunohistochemistry, while sustentacular cells were positive for S-100 protein.¹³ In our case, Zellballen pattern was observed with round to oval to polygonal chief cell sheaths separated by a prominent fibrovascular stromatolites. Increased number of mitoses were observed and the tissue was strongly positive for S-100 and chromogranin A and weakly positive for Synaptophysin, which was suggestive of the neuroendocrine origin of the tumor.

Another important factor needed for diagnosis is to determine whether the tumor is malignant or benign in nature. Paragangliomas have a higher tendency (20%) to be malignant as compared to pheochromocytomas (10%).¹ Malignant tumors more often than not are locally invasive and have distant metastasis.³

Wen et al concluded that A heterogeneous, hypervascular, retroperitoneal mass with areas of necrosis with typical clinical setting of headaches, hypertension and tremor, is highly predictive of the presence of an extra-adrenal PGLs.⁴ In the case described the patient had a history of palpitations with hypertension and the laparoscopically resected retroperitoneal mass had areas of necrosis on its gross specimen.

Wendelin et al observed that histopathological findings alone were not sufficient to differentiate between a benign and malignant tumor. They suggested that distant metastases and local invasion of adjacent organs were the only reliable indicators of malignancy.³ Our patient was deemed to have a benign tumor on histopathology and had no signs of distant metastasis or local invasion in the pre or post op scans.

CONCLUSION

Extra adrenal retroperitoneal paragangliomas are extremely rare neoplasms with a plethora of non-specific clinical presentations and a lack of definite gold standard pre-operative diagnostic investigation. It also has a tendency to be locally invasive and when untreated can also lead to per operative hypertensive crisis, renal failure, shock, torrential bleeding which may lead to fatality. Complete resection of the tumor post a meticulous pre-operative preparation remains as the mainstay modality of treatment. The anticipated effects of the catecholamine surge must always be prepared for and prevented by a pre-operative preparation of the patient. A complete tissue diagnosis with radiological and surgical evaluation of the tumor is a must for the complete diagnosis of the patient. We hence want to emphasise through our experience of this case on the importance of clinical suspicion and pre-operative diagnosis for proper management of such patients.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Ramnani S, Chawla S, Utaal MS, Singh M, Adlakha D, Thakor M. A rare case of extra adrenal retroperitoneal paraganglioma: case report. *Int Surg J* 2024;11:644-8.