CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
SJIF Impact Factor: 7.187

Available online at: http://www.iajps.com *A Case Report*

DILATED CARDIOMYOPATHY WITH HIDDEN PHEOCHROMOCYTOMA

[1]Rahat Ahmed Memon, MD, [2]Aisha, [3]Muhammad Amin, [4]Jaffer Ansari, [5]Ghulam Shahar Bano

[1]Internal Medicine Resident, Abington Jefferson Hospital, Rahatahmed227@yahoo.com, ORCID ID: 0000-0003-1304-8874

[2]Liaquat University of Medical & Health Sciences, Jamshoro Aishanoorkakepoto@gmail.com, ORCID ID: 0000-0002-6997-1732

[3]Tabba Heart Institute, Karachi, amin.memon@live.com

[4]Assistant Professor of Medicine, Washington University, St. Louis, Interventional Cardiologist, Belleville, Memorial Hospital, BJC Health, Belleville, IL muhammad.ansari@BJC.org

[5]M.B.B.S., Liaquat University of Medical & Health Sciences, Jamshoro shaharb468@gmail.com

Article Received: June 2022 **Accepted:** June2022 **Published:** July 2022

Abstract:

This report describes the case of a 38-year-old male with a no significant past medical history. The patient presented with the complaints of shortness of breath and episodic headache. In ER, his BP was 138/88 and physical examination was significant for lower lung field crackles and 1+ edema on dorsum of feet. His labs showed increased pro-NT BNP for 1328, CXR with mild to moderate pulmonary edema and cardiomegaly. Transthoracic echocardiogram showed EF of 25% with global hypokinesis. Administration of metoprolol succinate and lisinoprol, increased the systolic BP to 190 and secondary workup for hypertension showed increased plasma metanephrines which was subsequently confirmed by elevated 24-hour urine metanephrines. He had abdominal CT and MRI which showed mass in left adrenal gland. Elective left adrenalectomy yielded an adrenal gland mass which on biopsy confirmed pheochromocytoma.

Corresponding author:
Rahat Ahmed Memon,
Internal Medicine Resident,
Abington Jefferson Hospital,
Rahatahmed227@yahoo.com,
ORCID ID: 0000-0003-1304-8874

QR code

Please cite this article in press Rahat Ahmed Memon et al, ***Dilated Cardiomyopathy With Hidden Pheochromocytoma.,*** *Indo Am. J. P. Sci, 2022; 09(7).*

INTRODUCTION:

Pheochromocytoma is an important but sometimes untraceable cause of secondary hypertension. The pulsatile secretion of catechol- amine not only leads to hypertension, but also leads to a series of cardiac complications including cardiomyopathy and arrhythmia, [1–4] which sometimes are the initial manifestations of pheochromocytoma, and also make the diagnosis more intriguing

CASE:

This report describes the case of a 38-year-old male presenting with shortness of breath. In ER, his BP was 138/88 and physical examination was significant for lower lung field crackles and 1+ edema on dorsum of feet. His labs showed increased pro-NT BNP for 1328, CXR with mild to moderate pulmonary edema and cardiomegaly. He was given Lasix and his symptoms improved.

Transthoracic echocardiogram was done which showed EF of 25% with global hypokinesis. His cardiac stress test was normal. He was started on metoprolol succinate and lisinoprol, following which his systolic BP during the hospital stay was found to increase to 190s which was initially thought to be secondary to anxiety. But secondary workup for hypertension showed increased plasma metanephrines which was subsequently confirmed by elevated 24 hour urine metanephrines. He had abdominal CT and MRI which showed mass in left adrenal gland. He was subsequently started on phenoxybenzamine and discharged home with plan for followup after 2 weeks for elective left adrenalectomy.

2 weeks later on he had abdominal surgery for the resection of adrenal gland mass which on biopsy confirmed pheochromocytoma. Post operatively he followed with outpatient cardiology and was continued on metoprolol and lisinoprol. 4 months after the surgery, followup echocardiogram showed improved ejection fraction to 55-60%.

Histopathology Findings: Well circumscribed lesion with polygonal cells with granular cytoplasm (highlighted with yellow arrow head) with round to oval nuclei arranged in nested/trabecular pattern. A typical histopathological
pattern of pheochromocytoma

CXR: Inc pulmonary vascular congestion and increased interstitial marking consistent with pulmonary edema. Moderate cardiomegaly, Transthoracic echocardiogram with apical 4 chamber view: dilated left ventricular cavity with normal thickness. LV ejection fraction of 20-25%

Advanced Radiological Findings: CT abdomen showing right adrenal adenoma 36 x 23 mm and MRI right adrenal adenoma 36x24 mm. In this condition on MRI patient had non-enhanced lesion with lipoid features. However, in clinical context of elevated plasma metanephrine and 24 urine metanephrines. Patient underwent left adrenalectomy and subsequent biopsy result proved that patient had pheochromocytoma.

Lab findings:

Free plasma metanpehrine 186 pg/ml (normal is less than 57 pg/ml)
Free plasma normetanephrine 391 pg/ml (normal is less than 148 pg/ml)

This report describes the case of a 38-year-old male presenting with shortness of breath. In ER, his BP was 138/88 and physical examination was significant for lower lung field crackles and 1+ edema on dorsum of feet. His labs showed increased pro-NT BNP for 1328, CXR with mild to moderate pulmonary edema and cardiomegaly. He was given Lasix and his symptoms improved.

Transthoracic echocardiogram was done which showed EF of 25% with global hypokinesis. His cardiac stress test was normal. He was started on metoprolol succinate and lisinoprol, following which his systolic BP during the hospital stay was found to increase to 190s which was initially thought to be secondary to anxiety. But secondary workup for hypertension showed increased plasma metanephrines which was subsequently confirmed by elevated 24 hour urine metanephrines. He had abdominal CT and MRI which showed mass in left adrenal gland. He was subsequently started on phenoxybenzamine and discharged home with plan for followup after 2 weeks for elective left adrenalectomy.

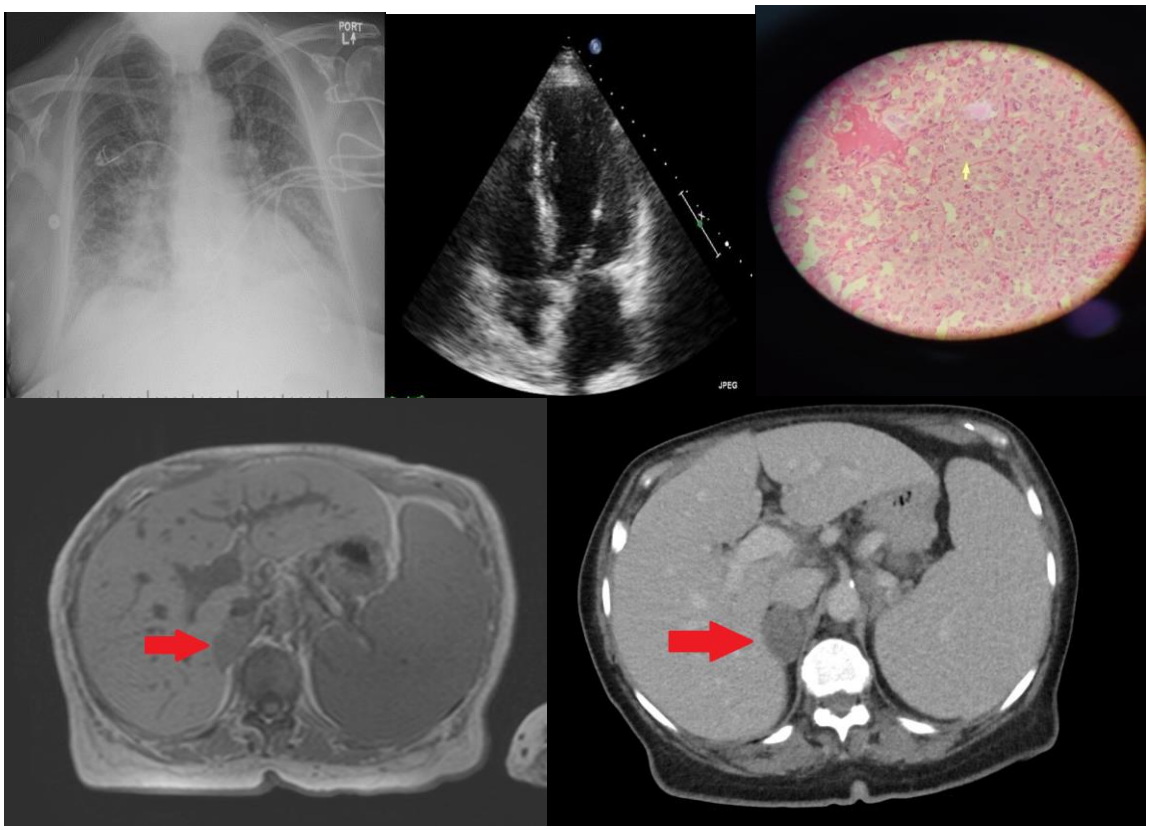
2 weeks later on he had abdominal surgery for the resection of adrenal gland mass which on biopsy confirmed pheochromocytoma. Post operatively he followed with outpatient cardiology and was continued on metoprolol and lisinoprol. 4 months after the surgery, followup echocardiogram showed improved ejection fraction to 55-60%.

Histopathology Findings: Well circumscribed lesion with polygonal cells with granular cytoplasm (highlighted with yellow arrow head) with round to oval nuclei arranged in nested/trabecular pattern. A typical histopathological
pattern of pheochromocytoma

CXR: Inc pulmonary vascular congestion and increased interstitial marking consistent with pulmonary edema. Moderate cardiomegaly, Transthoracic echocardiogram with apical 4 chamber view: dilated left ventricular cavity with normal thickness. LV ejection fraction of 20-25%

Advanced Radiological Findings: CT abdomen showing right adrenal adenoma 36 x 23 mm and MRI right adrenal adenoma 36x24 mm. In this condition on MRI patient had non-enhanced lesion with lipoid features. However, in clinical context of elevated plasma metanephrine and 24 urine metanephrines. Patient underwent left adrenalectomy and subsequent biopsy result proved that patient had pheochromocytoma.

Lab findings:
Free plasma metanpehrine 186 pg/ml (normal is less than 57 pg/ml)
Free plasma normetanephrine 391 pg/ml (normal is less than 148 pg/ml)



HISTORY:
There was no significant past medical history, except shortness of breath (3 months). He also admitted to experiencing episodic headaches which were diagnosed as migraines and he was taking acetaminophen and naproxen for it, which helped decreasing pain. He denied smoking or using any illicit drugs.

DISCUSSION:
The intraoperative presentation of pheochromocytoma is rare but has been previously reported. [5-8] The peak blood pressure and catechol- amine levels measured were very high compared with those reported in other series. [9] Predominantly epinephrine-secreting tumors make up 10% to 17% of all pheochromocytomas and are more likely to manifest with paroxysmal symptoms of beta-adrenoreceptor hyperstimulation, namely, palpitations, sweating, blanch- ing, anxiety, and hyperpyrexia. [9] Apart from headaches, this patient had no symptoms, possibly because of beta-adrenoceptor antagonism with atenolol.

The patient demonstrated both typical and atypical features of pheochromocytoma. The development of pulmonary edema and dilated cardiomyopathy are rare but recognized associations of pheochromocytoma. The pulmonary edema is secondary to postcapillary pulmonary vasoconstriction and catecholamine-induced myocardial dysfunction. It is usually fatal unless identified and managed promptly. [10] The myocardial damage results from the direct cardiotoxicity of high concentrations of catecholamines, increased cellular oxygen demand, and decreased coronary perfusion caused by adrenergic-mediated vasospasm. [11, 12]

The ECG changes together with the raised troponin T level and low cardiac output in this patient support the diagnosis of catecholamine-induced myocardial necrosis. Echocardiograms demonstrated dilated cardiomyopathy. This is the commonest pheo-chromocytoma-associated cardiomyopathy, and normally reverses over a period of months after tumor resection or aggressive medical treatment. [13]

Furosemide was used initially to treat the acute hypertensive crisis because the use of labetalol in pheochromocytoma has also been reported to precipitate hypertensive crisis and elevated vascular resistance. [14]

CONCLUSION:

In summary, this case highlights some interesting points. Pheochromocytomas can occur unexpectedly in the perioperative period, and the mortality rate is quoted as 33% to 50%. [5, 15, 16] A pheochromocytoma that manifested as a hypertensive crisis and cardiovascular instability following external palpation of the anesthetized patient's abdomen is detailed. Pulmonary edema and reversible catecholamine-induced cardiomyopathy developed. The cardiovascular instability and cardiomyopathy were reversed with medicinal treatment and successful surgical removal of the tumor at a later date.

REFERENCES:

1. T.Zelinka,O.Petrak,H.Turkova,etal.,Highinciden ceofcardiovascularcomplications in pheochromocytoma, Horm. Metab. Res. 44 (5) (2012) 379–384.
2. R. Yu, N.N. Nissen, S.I. Bannykh, Cardiac complications as initial manifestation of pheochromocytoma: frequency, outcome, and predictors, Endocr. Pract. 18 (4) (2012) 483–492.
3. A.Prejbisz,J.W.Lenders,G.Eisenhofer,A.Janusze wicz,Cardiovascularmanifestations of phaeochromocytoma, J. Hypertens. 29 (11) (2011) 2049–2060.
4. T.Yoshikawa,Takotsubocardiomyopathy,anewc onceptofcardiomyopathy:clinical features and pathophysiology, Int. J. Cardiol. 182C (2014) 297–303.
5. Sutton MG, Sheps SG, Lie JT: Prevalence of clinically unsus- pected phaeochromocytoma: Review of a 50-year autopsy series. Mayo Clin Proc 56:354-360, 1981
6. Crowley KJ, Cunningham AJ, Conroy B, et al: Phaeochromocy- toma: A presentation mimicking malignant hyperthermia. Anaesthesia 43:1031-1032, 1988
7. Ross EJ, Griffith DNW: The clinical presentation of phaeochro- mocytoma. Q J Med 266:485-496, 1989
8. Wooster DL, Mitchell RI: Unsuspected phaeochromocytoma presenting during surgery. Can Anaesth Soc J 28:471-474, 1981
9. Prys-Roberts C: Phaeochromocytoma: Recent progress in its management. Br J Anaesth 85:44-57, 2000
10. Kirkendall WM, Liechty RD, Culp DA: Diagnosis and treatment of patients with pheochromocytoma. Arch Intern Med 115:529-536, 1965
11. Primak RA, Spicer RD, Variend S: Sudden death after minor abdominal trauma: An unusual presentation of phaeochromocytoma. Br Med J 292:95-96, 1986
12. Bogdonoff DL: Pheochromocytoma: Specialist cases that all must be prepared to treat? J Cardiothorac Vasc Anesth 16:267-269, 2002
13. Quezado ZN, Keiser HR, Parker MM: Reversible myocardial depression after massive catecholamine release from a pheochromocy-toma. Crit Care Med 20:549-551, 1992
14. Wark JD, Larkins RG: Pulmonary edema after propranolol therapy in two cases of phaeochromocytoma. Br Med J 1:1395- 1396, 1978
15. Fahmy N, Assaad M, Bathija P, Whittier FC: Postoperative acute pulmonary edema: A rare presentation of pheochromocytoma. Clin Nephrol 48:122-124, 1997
16. Britain RT, Levy GP: A review of the animal pharmacology of labetalol, a combined beta-adrenoceptor-blocking drug. Br J Phar- macol 3:681, 1976.