Normal plasma and urine catecholamines in a patient with symptoms and radiological findings of a phaeochromocytoma cured by laparoscopic adrenalectomy

Yasir Mohamed Elhassan[1] , Richard Ross[1,2] , Saba Balasubramanian[1,2]

[1]Sheffield Teaching Hospitals NHS Trust, [2]University of Sheffield

Introduction

We report an unusual case of radiologically and histologically confirmed phaeochromocytoma with normal plasma and urine catecholamines and metabolites.

Case Presentation

- A 60-year-old female was referred with incidental 14mm enhancing right adrenal mass on a contrast CT abdomen whilst investigating for recurrent left iliac fossa pain and increased bowel frequency
- She reported a 2 year history of anxiety attacks, poor sleep, excessive sweating and weight loss
- Her past medical history included hypertension, asthma and recurrent vasovagal syncope
- Her medications included Lansoprazole, Salbutamol, Losartan, Citalopram and Diltiazem
- Systemic and abdominal examination was unremarkable apart from her anxiety. Her blood pressure was normal

Investigations

Hb	12.4 g/dl
WCC	4.7 x10⁹/L
Platelets	257 x10⁹/L
Na	143 mmol/L
K	4.2 mmol/L
Urea	7.2 mmol/L
Creatinine	52 umol/L
Glucose	4.7 mmol/L
T. Protein	78 g/L
Albumin	44 g/L
T. Bilirubin	9 umol/L
Alk.Phosph.	132 IU/L
ALT	30 IU/L
Corrected Calcium	2.48 mmol/L

Overnight 1 mg Dexamethasone supp.	Cortisol 12 nmol/L
Renin (0.5-3.5 nmol/L/hr)	0.7
Aldosterone (100-850 pmol/L)	70
DHEAS (0.4 – 4.0 umol/L)	1.4
24hr Urine Volume	1432
24hr Urine Adrenaline (0-93 nmol)	24
24hr Urine Noradrenaline (0-490 nmol)	165
24hr Urine Dopamine (0-3400 nmol)	649
24hr Urine Metanephrine (0-1.7 umol)	0.5
24hr Urine Normetanephrine (0-3.0 umol)	1.3

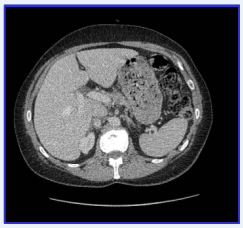

Figure 1.
CT abdomen with contrast showing enhancing right adrenal lesion

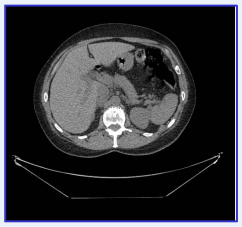

Figure 2.
Non-contrast CT abdomen showing loss of enhancment of right adrenal lesion

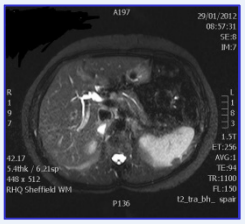

Figure 3.
MRI abdomen (axial view) showing bright right adrenal lesion on T2 weighted sequence

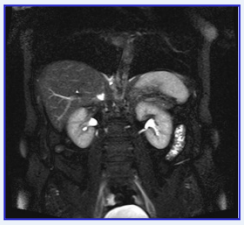

Figure 4.
MRI abdomen (coronal view) showing bright right adrenal lesion on T2 weighted sequence

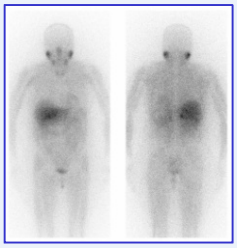

Figure 5.
Iodine-123 MIBG showing high uptake at the right adrenal gland

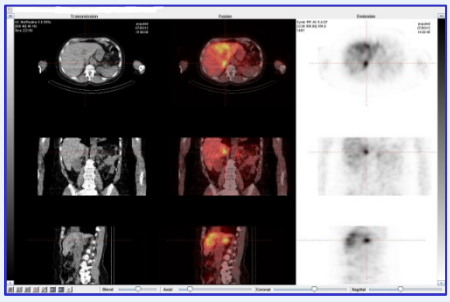

Figure 6.
SPECT-CT scan showing localization to the right adrenal gland

24 hour urine	14 Jan 2012	15 Jan 2012	24 Jan 2012	25 Jan 2012	23 Apr 2012	24 Apr 2012
Volume in ml	1432	1464	1776	1876	1294	2624
Adrenaline (0-93nmol/L)	24	13	21	32	26	50
Noradrenaline (0-490nmol/L)	165	139	266	236	172	247
Dopamine (0-3400nmol/L)	649	397	718	951	524	984
Metanephrines (0-1.7umol/L)	0.5	0.4	0.4	0.5	0.3	0.4
Normetanephrines (0-3.0umol/L)	1.3	0.8	1.4	1.9	0.9	1.7
3-Methoxytyramine (0-2.4umol/L)	0.8	0.6	0.8	1.2	0.5	1.0
	20 Feb 2012	23 Apr 2012				
Plasma Metanephrines (80-150pmol/L)	*735	133				
Plasma Normets. (120 – 1180pmol/L)	654	585				

*Plasma metanephrines sampled whilst patient on her usual medications. The level was normal (April 2012) when the test was repeated after withholding the medications.

Case progress

Preoperative

- Informed consent obtained after discussion of uncertainty of diagnosis, risks of surgery and the likelihood of persistent symptoms
- Preparation with Phenoxybenzamine

Surgery

- Retroperitoneoscopic right adrenalectomy - blood pressure lability during tumour manipulation noted
- Histology confirmed phaeochromocytoma (Figures 7 and 8)

Postoperative

- Significant drop in plasma metanephrines to <40pmol/L (ref. range 80-150)
- Resolution of symptoms

Figure 7.
Macroscopic appearance of longitudinal sections through the right adrenal gland showing the phaeochromocytoma (brown in colour) and incidental non-functioning cortical nodules

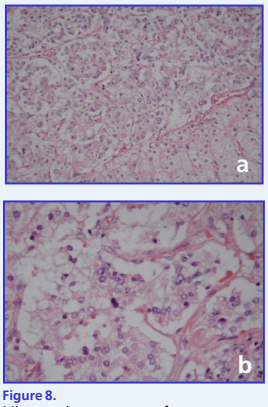

Figure 8.
Microscopic appearance of phaeochromocytoma under low power (a) and high power (b)

Conclusion

- **T2 weighted MRI findings and uptake on MIBI facilitated decision making in this patient with a small adrenal lesion**
- **Normal biochemistry does not rule out phaeochromomcytoma in small adrenal lesions**