**Case Report**

60-Year-Old Man with Pheochromocytoma and Clinical Picture of Depression

**Abstract**

**Introduction:** Pheochromocytoma is an adrenal gland tumour, which usually produces catecholamines. The classical triad of clinical symptoms consists of palpitations, headaches and profuse sweating. Other symptoms include: hypertension, anxiety, pallor, nausea, weakness. However, it can be asymptomatic. Because of unspecific symptoms the diagnosis of this rare neuroendocrine tumor can be missed or delayed. In differential diagnosis other entities should be considered: essential hypertension, anxiety attack, hyperthyroidism, hypogonadism, hypoglycemia, renal artery stenosis, intracranial lesion, autonomic epilepsy, carcinoid syndrome, use of cocaine or amphetamine.

The final diagnosis is based on biochemical testing of urine or plasma metanephrines and imaging examination (CT, MRI). Although huge improvement in biochemical testing is observed in case of lack of symptoms or non specific clinical picture, false positive biochemical results should be excluded.

**Case:** This study reports a 60-year-old man admitted to the hospital because of a left adrenal tumor (35 x 30 mm) found incidentally during abdominal ultrasound examination. The patient complained only of profuse sweating on exertion. He has been treated for hypertension for 7 years. There was no abnormalities in physical examination. Endocrine work-up revealed elevated urine metanephrines and urine noradrenaline, observed both before and after adrenal surgery. Histopathology report confirmed pheochromocytoma. To exclude drug interferences, depression medication after surgery was withdrawn for one month and repeated results of metanephrines and noradrenaline were normal. As the patient was in good condition with no deterioration of his emotional status clomipramine and minaserin were kept withdrawn and the patients remains without medication.

**Conclusion:** This case report shows that clinical picture of pheochromocytoma can mimic depression. Diagnosis of pheochromocytoma in patient with depression on medication may be difficult, especially when comes to the assessment of the cure after surgery.
to surgery with α- adrenolitics.

After surgical consultation, the patient was qualified to transperitoneal laparoscopic excision of the tumor. Histopathology report confirmed the diagnosis of pheochromocytoma. Genetic testing was negative towards RET, VHL and SDH mutations. After surgical intervention profuse sweating relieved, no other symptoms were present at that time. The patient still required antihypertensive medication. To assess complete chromaffin tissue excision, one month after surgery metanephrines and catecholamines were measured. 24h urine collection showed elevated level of metanephrines and noradrenaline, however lower than before the operation (Table 2). As this could be an effect of interference with antidepressant drugs, to avoid unnecessary imaging studies stressful for the patient, the decision about drugs withdrawal was undertaken to repeat the measurements (the psychiatric consultation was objective). After 1 month of “drugs wash-out” the measurements of diurnal urinary metanephrines and noradrenaline were normal (Table 2). As the patient was in good condition with no deterioration of his emotional status clomipramine and minaserin were kept withdrawn and the patients remains without medication.

Discussion

Here, we have presented patient with depressive symptoms, which unmask pheochromocytoma. Typical spells with triad of symptoms i.e. headache, sweating and heart palpitation or tachycardia occur quite rare. Other common symptoms include: tremor, pallor, and nausea or vomiting, diaphoresis, episodic anxiety, asymptomatic hyperglycemia, abdominal or chest pain. It is essential to identify patients with pheochromocytoma as undetected tumors may cause severe life-threatening condition i.e. heart attack, brain ischemia, arrhythmias, kidney failure, dissecting aorta aneurism or irreversible shock [3-5]. Conditions, which should be considered in differential diagnosis include: essential hypertension, anxiety attack, hyperthyroidism, hypogonadism, hyperglycemia, renal artery stenosis, intracranial lesion, autonomic epilepsy, carcinoid syndrome, use of cocaine or amphetamine [1,6]. Our patient presented with well controlled hypertension and sweating only on exertion. Hypertension in pheochromocytoma patients is considered to be typical manifestation [7]. It occurs in about 90% of cases and among them 50% suffer from paroxysms of severe hypertension. On the other hand, some patients may present with well controlled hypertension between hypertension paroxysms. Moreover, in about 14% of cases phenomenon called tachyphylaxis may be present, caused by constantly high norepinephrine levels, which leads to tolerance. In that rare condition, there is no hypertension in patients affected by pheochromocytoma. Sweating in pheochromocytoma occurs late during the paroxysm. It is a result of thermoregulatory reflex in response to prolonged vasoconstriction. Furthermore, in some patients can be observed unexplained sustained fever [2,8,9].

Neurological and psychiatric disorders should not be omitted. Depressive and anxiety disorders can be provoked by the presence of symptoms of pheochromocytoma but also may mimic pheochromocytoma [10,11]. However, panic attacks are often associated with symptoms frequent in pheochromocytoma like: tachycardia, chest discomfort or tachypnoe [12-14]. The rarity of pheochromocytoma shifts the diagnosis towards psychiatric disorders. In our patient depressive symptoms were likely caused by pheochromocytoma, what the patient and us realized after antidepressive medication withdrawal after surgery. Many medication can interfere with metanephrines and catecholamines measurements. The most commonly mentioned include sotalol, labetalol, tricyclic antidepressants, MAO inhibitors, anesthetics, cocaine, lidocaine and acetaminophen. Moreover smoking, caffeine, renal failure or other stressfull illness may result in elevated plasma levels of metanephrines [12,15]. This can make the diagnosis difficult but also, as in our case may lead to confusion about complete remission after surgery.

Table 1: Laboratory findings before surgery.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>24h urine metanephrines*</td>
<td>1811</td>
<td>100-1000 µg/24h</td>
</tr>
<tr>
<td>24h urine adrenaline**</td>
<td>5,5</td>
<td>4-20 µg/24h</td>
</tr>
<tr>
<td>24h urine noradrenaline**</td>
<td>319</td>
<td>23-105 µg/24h</td>
</tr>
<tr>
<td>Cortisol after 1 mg dexamethasone suppression test</td>
<td>0,79</td>
<td>&lt; 1,8 µg/dl</td>
</tr>
<tr>
<td>DHEAS</td>
<td>92,8</td>
<td>51-295 ug/dl</td>
</tr>
<tr>
<td>24h urine sodium</td>
<td>262</td>
<td>40-220 mmol/24h</td>
</tr>
<tr>
<td>24h urine potassium</td>
<td>108</td>
<td>25-125 mmol/24h</td>
</tr>
<tr>
<td>24h urine creatinine</td>
<td>1,9</td>
<td>0,9-2,4 mmol/24h</td>
</tr>
<tr>
<td>Plasma chromogranin A</td>
<td>78,41</td>
<td>0-94 ng/ml</td>
</tr>
</tbody>
</table>

DHEAS- dehydroepiandrosterone sulphate
*Measured by spectrophotometric method
**Measured by high pressure liquid chromatography (HPLC)

Table 2: Metanephrines and catecholamines measurement before (pre-op) and after Surgery (post-op) as well as 1 month after antidepressants withdrawal.

<table>
<thead>
<tr>
<th>24 h urine collection</th>
<th>Pre-op</th>
<th>1 Post-op</th>
<th>1 month after antidepressants withdrawal</th>
</tr>
</thead>
<tbody>
<tr>
<td>24h urine metanephrines</td>
<td>1811</td>
<td>1354</td>
<td>500</td>
</tr>
<tr>
<td>24h urine adrenaline</td>
<td>5,5</td>
<td>4,4</td>
<td>4,0</td>
</tr>
<tr>
<td>24h urine noradrenaline</td>
<td>319</td>
<td>150,2</td>
<td>69,3</td>
</tr>
<tr>
<td>Plasma chromogranin A</td>
<td>78,41</td>
<td>13,78</td>
<td>0-94 ng/ml</td>
</tr>
</tbody>
</table>
Our patient presented with both true overproduction of catecholamines and false connected to the treatment applied. Beside biochemical interference, some symptoms may be a consequence of antidepressant therapy. In the literature, there are reports, which shows pheo attacks provoked by antidepressant therapy [3,16]. Ferguson reported a case of 35-year-old man with pheochromocytoma who developed crisis with cardiac shock, shortly after beginning of imipramine therapy.

To ultimately define, whether the increased level of catecholamines is caused by antidepressant drugs it is necessary to discontinue therapy for at least 1 month.

Conclusion

The clinical picture of pheochromocytoma can mimic depression. Diagnosis of pheochromocytoma in patients on antidepressants may be difficult, especially when patient presents only with unspecific symptoms and when comes to the assessment of the cure after surgery.

References


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