

# Phaeochromocytoma masquerading as anxiety and depression

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Authors' Contribution:  
Study Design A  
Data Collection B  
Statistical Analysis C  
Data Interpretation D  
Manuscript Preparation E  
Literature Search F  
Funds Collection G

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**Patient:** Female, 36  
**Final Diagnosis:** Pheochromocytoma  
**Symptoms:** Anxiety • depression  
**Medication:** —  
**Clinical Procedure:** —  
**Specialty:** Oncology • endocrinology

**Objective:** Unusual clinical course, Mistake in diagnosis





**Background:** Pheochromocytoma is a rare catecholamine-producing neuroendocrine tumour with protean clinical manifestations, which can mimic a variety of conditions, often resulting in erroneous and delayed diagnosis.

**Case Report:** A case of undiagnosed pheochromocytoma in a 36 year old female with a 15 year history of anxiety and depression is described. The patient collapsed while on the phone to the next of kin and stopped breathing. She was initially revived but suffered a cardiac arrest and died. At autopsy an undiagnosed adrenal pheochromocytoma was found.

**Conclusions:** When considering a diagnosis of anxiety and depression, medical causes of the symptoms must be excluded. Common conditions, such as thyroid disorders, stimulant abuse, asthma, cardiac arrhythmias, alcohol withdrawal and rarely pheochromocytoma, causing a similar spectrum of symptoms should be excluded by history and clinical examination.

**Key words:** phaeochromocytoma • anxiety • depression

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## Background

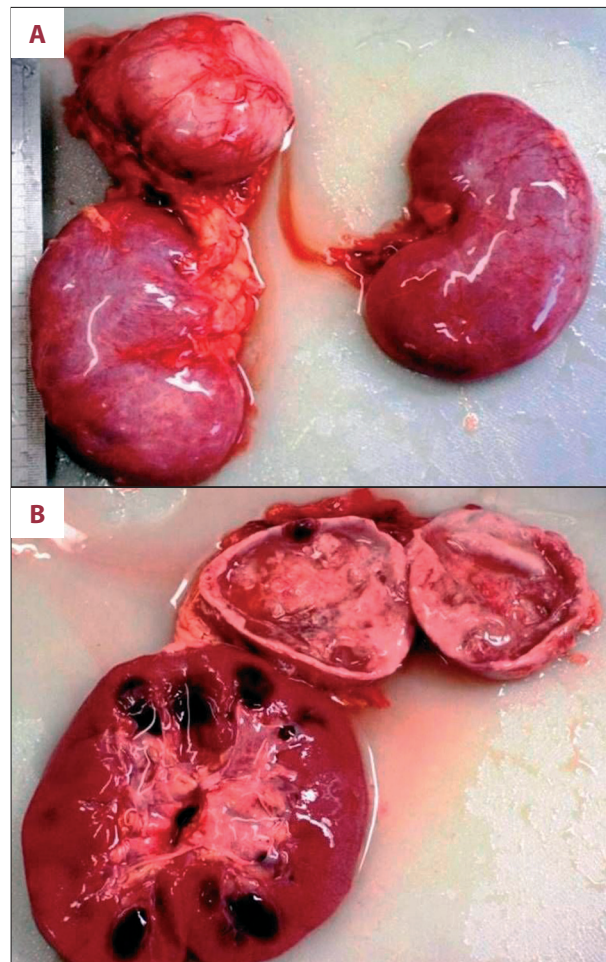
Pheochromocytoma is a rare catecholamine-producing tumour with an annual incidence rate of 2 cases per 1 million per year in the general population [1]. The incidence of pheochromocytoma in autopsy studies is under 0.1% and autopsy studies have also shown that up to 50% of pheochromocytomas are unrecognized [2]. The tumour has protean manifestations, mimicking a variety of conditions, earning the title “great mimic” and often resulting in erroneous and delayed diagnosis, which if missed or not properly treated, will almost invariably prove fatal [3]. Pheochromocytomas are most frequent in individuals between 40 and 50 years, with very slight predilection in females. The tumours occur in all races, but have been predominantly reported in Caucasians [4]. Pheochromocytomas typically arise in the adrenal medullary chromaffin tissue but in about 15% of cases from extra-adrenal chromaffin tissues. Those arising from extra-adrenal tissue are commonly known as paragangliomas [5]. Almost all pheochromocytomas are abdominal tumours with >90% arising in the adrenal glands. Extra-adrenal pheochromocytomas develop in the paraganglion chromaffin tissues of the sympathetic nervous system from the base of the brain to the urinary bladder [5].

An undiagnosed fatal case of Pheochromocytoma in a patient with a 15 year history of anxiety and depression is presented.

## Case Report

A 36 year old female had been feeling unwell for 6 months, presented with cough and shortness of breath. She was given antibiotics and the  $\beta$  blocker Propranolol. A few hours later she contacted her next of kin and asked her to collect her children from school because she was not feeling well. During the phone conversation, the patient collapsed and the next of kin contacted the Emergency Services. When the ambulance officers arrived, they found her to be short of breath and blue. Her heart rate was 186/minute but blood pressure was apparently not recorded. She then stopped breathing while being assessed and went into a cardiac arrest. She was successfully resuscitated and taken to hospital where she went into another cardiac arrest, which was soon followed by profound metabolic acidosis, from which she did not recover. Death was attributed to acute cardiac failure due to a pheochromocytoma crisis. Toxicological analysis showed blood propranolol level of <0.1 mg/L (Therapeutic level 6–701 mg/L).

Her past medical history included “anxiety and depression” for approximately 15 years, for which she had been taking 100 mg Sertraline per day. Her blood pressure, 6 month earlier had been recorded at 146/103 mm/Hg, which was attributed to



**Figure 1.** (A) Shows the macroscopic image of both kidneys and an adrenal gland tumour and (B) shows the right kidney and a cystic right adrenal gland tumour.

her anxiety and 3 months later her blood pressure had been found to be 140/80 mm/Hg. There is no record of blood pressure during the final event. Immediately prior to death she had been investigated for hiatus hernia.

At autopsy, an 80 mm cystic mass was found in the right adrenal gland (Figure 1). No other endocrine abnormality was found. The heart showed left ventricular hypertrophy, the lungs were markedly congested and oedematous and small amounts of straw coloured fluid were present in each pleural cavity. The liver was enlarged and appeared pale. The kidneys, ureters, bladder and genitalia were normal. No Lymphoreticular, nervous system or musculoskeletal system abnormality was detected. Microscopic examination showed the tumour to be a pheochromocytoma, which was confirmed by immunoreactivity of the tumour cells for the neuroendocrine markers Chromogranin A and Synaptophysin. No other significant microscopic abnormality noted in the deceased.

## Discussion

Patients with pheochromocytoma may present with symptoms of excess catecholamine production, such as hypertension, headache, perspiration, forceful palpitations, tremor and facial pallor. This patient did not appear to show these symptoms but if she did they must have been either very minor or misinterpreted as anxiety. These symptoms are often paroxysmal, although sustained hypertension in between paroxysmal episodes occurs in 50% of the patients [6]. Hypertension is not recorded in deceased's notes. This raises the possibility that hypertension if present, would have been paroxysmal. Hypertensive crisis can lead to cardiac arrhythmias, myocardial infarction, and even death. This is the most likely explanation in the deceased. Approximately half of the patients with pheochromocytoma are asymptomatic because their neoplasms are discovered in the presymptomatic state by either abdominal imaging for other reasons or genetic testing in at-risk family members [7]. There is no family history in the current case and disease was not suspected, hence not investigated by imaging. The diagnosis of pheochromocytoma is established by biochemical testing to document excess catecholamine secretion. Because the disease was not suspected during like not biochemical investigation were performed. In this case, the patient had been treated for anxiety and depression for 15 years and there was no history of high blood pressure. The first real presentation in this case was a fatal crisis.

## References:

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Most pheochromocytomas arise sporadically as an incidental unifocal and unilateral adrenal mass. The majority of these neoplasms are potentially curable benign tumours but approximately 10% are malignant. Unfortunately, no other reliable clinical, biochemical, or histological features distinguish a malignant from a benign tumours [8].

Although the tumour in this case was pathologically benign, its metabolic effects caused a fatal outcome.

Although the patient received the  $\beta$  blocker propranolol, post-mortem blood levels of propranolol were very low and propranolol may not have contributed to death.

## Conclusions

Pheochromocytoma is a very rare potentially lethal disease of many guises. These are variable and often non-specific symptoms, leading to long time delays between onset and diagnosis. Hypertension is not always a feature and when present is may be episodic. Suspected cases should be investigated by measurement of catecholamines in 24 hour urine collection or in plasma. Although the usual manifestations of the disease are very well documented, a fatal outcome in an otherwise well patient is not well documented. This case heightens the fact that a tumour does not have to be malignant to cause a fatality.  $\beta$  blockers should not be prescribed in patients suspected of having pheochromocytoma.