# "Incidentaloma" of the adrenal gland

H. Santos*, A. Gonçalves**, A. Pereira***, F. Guedes***, A. Branco****

**Abstract**

Making greater use of Computerized Axial Tomography and Magnetic resonance Imaging has increased the number of accidental discoveries of adrenal masses, which has become a serious problem in the approach and clinical behavior towards patients.

The authors report a clinical case of a healthy 30 years old pregnant woman who was submitted to a routine abdominal and pelvic ultrasound, which showed a solid mass in the right adrenal gland. After having made several screening tests, a phaeochromocytoma was diagnosed which is surgically removed.

The authors also discuss the strategy of clinical investigation, towards the incidental discovery of an adrenal mass.

Key words: "incidentaloma", phaeochromocytoma, adrenal gland.

## Introduction

Since the introduction of Computed Axial Tomography (CAT), the frequency of accidental discovery of unsuspected masses in the suprarenal gland in abdominal CAT scans has increased. Today, radiological techniques enable us to detect masses of dimensions larger than 5 mm.[1] Most nodules are between 1 and 3 cm in diameter, and it is very rare to find masses larger than 10 cm[2].

The prevalence of the accidental discovery of masses of the suprarenal gland in abdominal CAT scan performed for other reasons is 0.6% to 1.3 %, a value that is close to the autopsy findings.[2,3] There is a greater probability of finding an "incidentaloma" in women, among the elderly population, and in those with high blood pressure.[2]

Various studies enable us to conclude that the majority of these tumors detected accidentally are benign adenomas, cysts and myelolipomas, and are not generally associated with increased excretion of hormones from the suprarenal gland.[4] The functional capacity, size of the tumor, the patient's age, and the imaging characteristics of the mass are important in the differentiation of benign or malignant adrenal tumors.[4] In the imaging study, the size of the mass is the most important determining factor of the functioning nature of the lesion: Adenomas measuring ≥ 6 cm are rare, cysts sometimes reach large dimensions, and the majority of carcinomas of the suprarenal gland are ≥ 6 cm.[5] Areas of calcification, irregular contours and heterogeneity are all signs of malignity.[5] The estimated prevalence of silent carcinoma of the suprarenal gland is less than 1 in 250,000 cases.[6]

The finding of an "incidentaloma" should lead to an evaluation of the patient, looking for signs and symptoms of suprarenal dysfunction (cortical or bone marrow) or the existence of malignity. They are clinically silent in 3 to 10% of cases.[2]

The diagnostic and therapeutic attitude, when faced with an "incidentaloma" of the suprarenal gland, is controversial, and should be based on the clinical history, physical exam and laboratory exams. The evaluation of biochemical activity is essential in the event of an accidental discovery of a mass in the suprarenal gland.[4,5] In addition, some diagnostic hypotheses, such as simple adrenal cysts, myelolipomas or foci of suprarenal hemorrhage, can usually be diagnosed by the imaging characteristics of CAT scan.[1,3] Suprarenal metastization, an important hypothesis to consider, can only be diagnosed by invasive techniques.[3]

## Case report

Patient aged 30 years, referred by her attending physician and admitted to our service on 25th Sept 1994 for clarification of a tumoral formation in the right

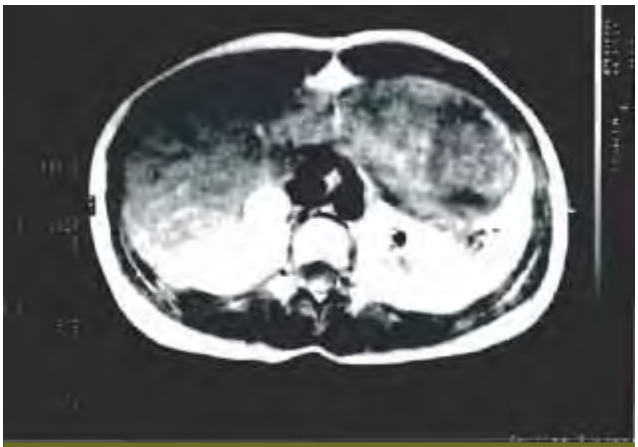
* Resident to the Internal Medicine Supplementary Internship

**Internal Medicine Interim Assistant

***Internal Medicine Senior Assistant

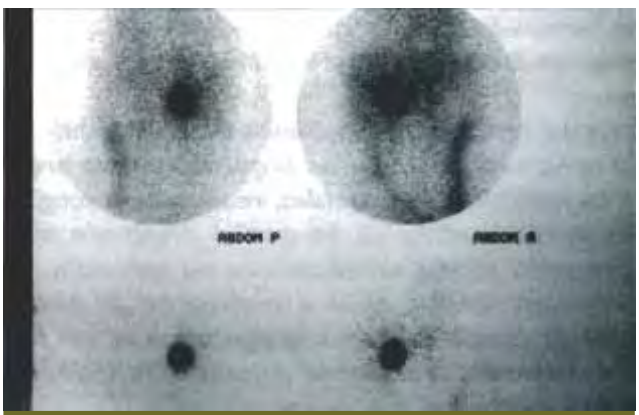
****Head of the Cardiology Service

Medicine Service of Figueira da Foz District Hospital



Abdominal CAT. Imaging showing a round formation in the right suprarenal gland

FIG. 1



Scintigram with MIBG – accentuated hyperfixation can be seen in the projection of the right suprarenal gland

FIG. 2

suprarenal gland, discovered accidentally during ultrasound of the abdomen/pelvis. This exam had been requested by her attending physician in November 1992, during a routine test during pregnancy, which occurred without complications. Although the patient did not present any symptoms, in January 1994, the abdominal ultrasound was repeated, which confirmed a "round formation in the right suprarenal gland". CAT and magnetic resonance imaging (MRI) of the abdomen were subsequently carried out, suggesting the possibility that the mass found was a phaeochromocytoma (*Fig. 1*).

The personal history included episodes of sporadic migraines that had occurred for a long time, and the use of oral contraceptives; the patient had had three previous pregnancies, and a spontaneous abortion. She had been admitted previously (28th February 1994) for clarification of the right suprarenal formation, but the study was incomplete. The family history contained nothing of relevance.

Objectively, she presented, on admission, an uncharacteristic morphotype, a rhythmic heart rate of 76 ppm, and normal blood pressure values (100/60 mmHg in both upper limbs). The rest of the objective exam was of no relevance.

In view of the initial diagnosis of "incidentaloma" of the suprarenal gland, various complementary diagnostic exams were carried out to identify the nature of the tumor, particularly its functioning capacity. The serum and urinary ionogram, aldosterone levels, ACTH and serum cortisol, and renin plasma activity were normal, presenting a high value of urinary metanephrines: 4 mg/24H (normal value < 1.0 mg/24H). Ambulatory monitoring of the blood pressure (M.A.P.A.) was carried out, and the results are shown in *Table 1*. In view of a probable diagnosis of phaeochromocytoma, a scintigram was performed with MIBG (meta-iodine-benzyl guanidine with I131), which showed accentuated hyperfixation in the right suprarenal glandular projection, suggesting the presence of a phaeochromocytoma (*Fig. 2*).

On the 16th March 1995, the patient was submitted to right suprarenalectomy at the Surgery Service III of Coimbra University Hospital. During the surgery, an episode of Paroxysmal tachycardia and a hypertensive crisis occurred. The histopathological diagnosis confirmed the diagnosis of phaeochromocytoma of the right suprarenal gland.

The patient is currently clinically well, without signs of high blood pressure, and is in regular follow-up at our clinic.

## Discussion

The evaluation and therapy of patients diagnosed with an "incidentaloma" is controversial. Various strategies have been proposed for the investigation of those with lesions of the hormonally active suprarenal gland, particularly phaeochromocytomas or functioning carcinomas and functioning adenomas of the suprarenal gland with excess glucocorticoids, mineralocorticoids, or sexual steroids. The prevalence

**TABLE I**

**M.A.P.A. – Summary of the results obtained**

| Daytime BP values (06:00 – 22:00) | Night-time BP values (22:00 – 06:00) |
|---|---|
| Highest systolic BP: 156 mmHg | Highest systolic BP: 109 mmHg |
| Highest diastolic BP: 108 mmHg | Highest diastolic BP: 75 mmHg |
| Lowest systolic BP: 89 mmHg | Lowest systolic BP: 90 mmHg |
| Highest diastolic BP: 49 mmHg | Highest diastolic BP: 49 mmHg |
| | |
| Systolic BP > 140 mmHg: 2.7% | Systolic BP > 140 mmHg: 0.0% |
| Diastolic BP > 90 mmHg: 8.1% | Diastolic BP > 90 mmHg: 0.0% |

of the phaeochromocytoma in suprarenal masses discovered occasionally is 6.5%, and high blood pressure is present in 61% of cases.[3]

Our clinical case involved a young, healthy woman, notably without high blood pressure, in whom a solid formation was accidentally discovered in the right suprarenal gland. In this case, the subsequently study did not reveal any difficulty, as the imaging exams carried out initially (CAT, MRI and scintigram with MIBG-I131) suggested that it was a phaeochromocytoma, and measurement of urinary metanephrines revealed a high value. The diagnosis of phaeochromocytoma was subsequently confirmed histologically.

In all cases, adequate endocrine evaluation should be performed. Functioning tumors of the suprarenal gland should be surgically removed.[1,2,3,4,5] The laboratory study included general biochemistry and hematological profile. Extensive routine hormonal analysis is unnecessary in the evaluation of the "incidentaloma". The specific endocrinological analyses suggested for screening of functioning tumors are as follows:

1) Phaeochromocytoma: 24-hour urinary catecholamine and its metabolites.[1]

2) Cushing's Syndrome: 24-hour urinary free cortisol.[1] Some authors include the rapid dexamethasone suppression test in the initial laboratory tests of these patients.[2]

3) Primary hyperaldosteronism: Potassium serum levels; if < 3.5 mEq/L the activity of the renin and plasma aldosterone should be obtained. It is a rare diagnosis in cases of "incidentaloma".[1]

4) Sex hormone producing tumors: determining the plasma levels of sex hormones should only be done in cases where the clinical symptoms are suggestive.[1]

## Conclusion

In the evaluation of patients diagnosed with an "incidentaloma" it is important to define, on one hand, the size of the tumor, and on the other, its functioning capacity, with the surgical solution being based on the evaluation of these criteria.

A negative endocrine evaluation will identify a non-functioning tumor of the suprarenal gland. The subsequent attitude will depend on its size, as it is an important determining factor in determining whether the tumor is benign or malignant. Tumors larger than 5 cm should be removed, regardless of the patient's age and hormonal or radiological characteristics.[4,5]

Cushing's Syndrome, which is not a common endocrine situation in "incidentaloma", is relatively common in patients with functioning tumors of the suprarenal gland. These tumors are generally benign, although suprarenal carcinoma is commonly associated with Cushing's Syndrome.[4,5]

The complete absence of symptoms, and also the normal blood pressure values, makes the hypotheses of a phaeochromocytoma unlikely. However, as it is a potentially lethal condition, screening should be done for phaeochromocytoma in all "incidentalomas".[3]

When a conservative attitude is adopted, the follow-up of these patients should be carried out at three months with CAT scan of the suprarenal glands.[3] The tumor should be excised if it increases in size. ■

## References

1. Nagler JL, Radon R. Evaluation and Management of the Incidentally Discovered Adrenal Mass. The Endocrinologist 1991; 1 (1); 5-8.

2. Oinkers W. Diagnostic puzzle of the adrenal "incidentaloma". European J Endocrine 1995; 132: 419-421.

3. Ross Nathan S, Aaron David C. Hormonal Evaluation of the patient with an Incidentally Discovered Adrenal Mass. N Engle J Med 1990; 323 (20): 1404-1405.

4. Guerrero Luis A. Diagnostic and Therapeutic Approach to Incidental Adrenal Mass. Urology 1985; XXVI (5): 435-440.

5. Copeland Paul M. The Incidentally Discovered Adrenal Mass. Diagnosis and Treatment. Ann Intern Med 1983; 98(6); 940-945.

6. Gross M D, Shapiro B. Clinically Silent Adrenal Masses, Clinical Review 50. J Clint End Meta 1993; 77 (4): 885-886.