

# Adrenal ultrasound

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## ABSTRACT

Ultrasound is the first step to detect an abdominal tumour at the level of adrenal. The most common scenario is related to the pelvic and abdominal ultrasound. This kind of tumour is more frequently seen in menopausal women than in premenopausal ones. We introduce a case of a menopausal woman accidentally detected at ultrasound with an adrenal mass starting from a routine gynaecological control. The use of ultrasound on adrenal masses is related to their detection and follow-up in cases when surgery is not necessary.

**Keywords:** adrenal, ultrasound, tumour

## INTRODUCTION

## AIM

## METHOD

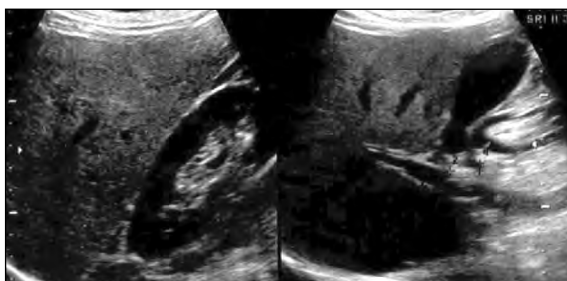
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duced. The patient agreed for anonymously use of her medical records.

### CASE PRESENTATION

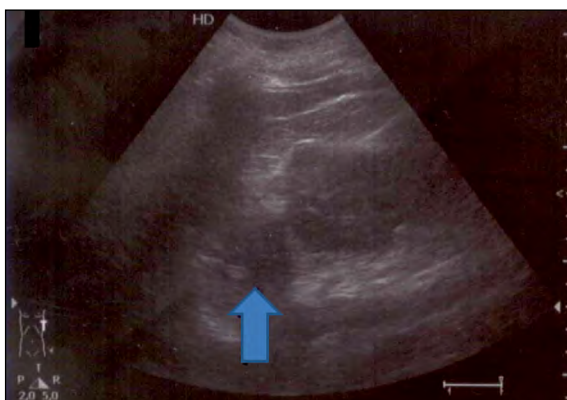
This is a 65-year old female, with irrelevant family medical history, who was admitted for an adrenal tumour accidentally detected at ultrasound after an initial gynaecological evaluation. She is known with arterial hypertension under medication with controlled values of blood pressure; also she has statine therapy for hyperlipemia. She received the diagnosis of osteoporosis and multiple artrosis a few years ago but no particular therapy was offered to the patient. She had 2 births, and reached menopause at age of 50 years. An abdominal ultrasound performed in December 2016 (3 years prior to current presentation) found no particular aspect (Fig. 1).



**FIGURE 1.** Abdominal ultrasound performed at age of 62 years did not detect any adrenal mass

### Admission

Currently the patient had non-specific pain of low intensity at the pelvic and abdominal level with lumbar irradiation. A gynaecological check-up was within normal parameters for age. A pelvic and abdominal ultrasound was recommended. The patient had the echographic evaluation done and an adrenal mass at the left gland was suspected (Fig. 2).



**FIGURE 2.** Abdominal ultrasound performed at age of 65 years did not detect any adrenal mass

The maximum diameter of the tumour is 2 centimetres (cm). No local lymph nodes enlargement was detected. Clinical examination showed normal thyroid, and controlled cardiovascular parameters under medication.

### Lab findings

Blood ionogram including serum sodium and potassium were within normal values. Oral glucose tolerance test identified impaired glucose tolerance based on a blood glucose level of 141 mg/dl 2-hours after oral administration of 75 grams glucose (associating glycated haemoglobin of 5.7%, normal values between 4.5 and 5.9%).

### Endocrine panel

Normal thyroid function was routinely assessed. Specific adrenal profile showed the following results: negative profile for medullar secretion of catecholamines, normal morning plasma cortisol and ACTH (AdrenoCorticotropic Hormone) with suppression after 1 mg dexamethasone test to 2.06 µg/dl (normal level of suppression is considered at less than 1.8 µg/dl) (Table 1).

**TABLE 1.** The adrenal profile on a 65-year old female with left adrenal tumour

Parameter	value	normal	Units
ACTH	19.04	3-66	pg/ml
Morning plasma cortisol	10.89	4.82-19.5	µg/dl
Chromogranin A	21.8	20-100	ng/ml
Neuronal specific enolase	8.48	0-12	ng/ml
Plasma metanephrines	10.1	10-90	pg/ml
Plasma normetanephrines	88.3	20-200	pg/ml
DHEA-S*	44.84	9.4-246	µg/dl

\*DHEA-S = Dehydroepiandrosterone sulphate

Based on these the tumour was considered negative for a secretory adrenal profile.

### Approach

A secondary imagery approach was done using computed tomography. This confirmed the finding from abdominal ultrasound: a left adrenal mass of 1.7 by 2 cm (Fig. 3).

Periodic check-up is recommended using ultrasound or computed tomography/magnetic resonance imagery. Also, in addition to prior diagnosis of osteoporosis, a central DXA (Dual-Energy X-Ray Absorptiometry) was done and confirmed it based on lumbar L1-2 T-score of -2.6 SD (a bone mineral density of 0.849 g/sqcm). The patient had normal PTH of 51.78 pg/ml (normal 16-65 pg/ml), and blood bone turnover markers – of formation P1NP

46.72 pg/ml (normal between 15 and 74 pg/ml), and of resorption CrossLaps 0.464 ng/ml (normal between 0.33 and 0.782 ng/ml). Further weekly alendronate and vitamin D supplements were offered to the patient.



**FIGURE 3.** Abdominal computed tomography showing a well shaped homogenous tumour at the level of left adrenal gland of 1.7 by 2 cm

rameters and the diameters of the mass [9,10]. Our patient did not have the diagnosis established 3 years before the current evaluation; it is difficult to appreciate if the tumour was positive at that time knowing the age-related incidence. When it comes to growth rate, this is most probably a slow speed parameter so a dramatic increase of an adrenal incidentaloma is hardly expected [9,10]. Another observation is related to the response after dexamethasone suppression test that was near the recommended cut-off, a formerly called sub-clinical Cushing's syndrome [2,6]. There is a current debate if the patients in this particular situation should have adrenalectomy but a conservative approach seemed more adequate in our case with medication control of blood pressure and potential bone loss [2,6].

## CONCLUSION

The use of ultrasound on adrenal masses is related to their detection and follow-up in cases when surgery is not necessary.

## DISCUSSION

The detection of an adrenal tumour based on ultrasound depends on real time examination pa-

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