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Primary aldosteronism in pregnancy: diagnostic and therapeutic challenges

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Primary aldosteronism (PA) is uncommon in pregnancy; approximately 40 cases have been reported previously in the literature, and little information is available concerning its optimal treatment [1].

Here, we present a rare case of aldosterone-producing adrenal adenoma (APA) in a pregnant woman with a 37-week gestation and its peculiarities.

In May 2020, a 39-year-old Asian woman, gravida 0, para 0, at 37 weeks' gestation was referred to our department for evaluation of high blood pressure detected on routine exam. At the time of admission, her blood pressure was 152/93 mm Hg, baseline laboratory investigations showed normal complete blood count, and renal and liver function with normal serum urate concentration. However, laboratory tests revealed hypokalaemia (K = 2.8 mEq/L; reference range: 3.8–5.5 mEq/L), and urinalysis showed 1+ proteinuria. The admission cardiotocography was reactive, and foetal ultrasound showed normal growth for gestational age.

Supplementations with potassium were introduced both orally and intravenously, and therapy with -methyldopa was started and eventually maximized at 1500 mg daily. Nonetheless, our patient remained hypokalaemic and hypertensive (up to 180/100 mm Hg) despite being prescribed α-methyldopa and potassium supplements. Consequently, we consulted with our endocrinology department, and spironolactone (100 mg daily) was added for better blood pressure control.

Despite our efforts we were unable to control her blood pressure or resolve her hypokalaemia. Accordingly, we decided that an emergency caesarean section was the most beneficial option for both the mother and the foetus.

On the third day after admission the patient underwent urgent caesarean delivery; a female infant was born with an Apgar score of 8, 8, and 9, weight of 3360 g and height of 51 cm. Additional testing after childbirth demonstrated that plasma renin activity (supine position) was not suppressed while plasma aldosterone levels (morning blood sample; 2.52 nmol/L; reference range: 0.189–0.481 nmol/L) were elevated. Plasma free cortisol and metanephrine levels were normal. An abdominal computer tomography scan with contrast media demonstrated a left adrenal mass 2 × 1 cm (Fig. 1), and a left open retroperitoneal adrenalectomy was performed 3 weeks after the delivery. The histopathology report supported the diagnosis of cortical adrenal adenoma composed of zona fasciculata-like cells (Fig. 2).

At 12-month follow-up, the woman is normotensive with normokalaemia, and the infant female's psychophysical development is normal.

Primary aldosteronism during pregnancy is rare and is associated with high rates of unfavourable maternal

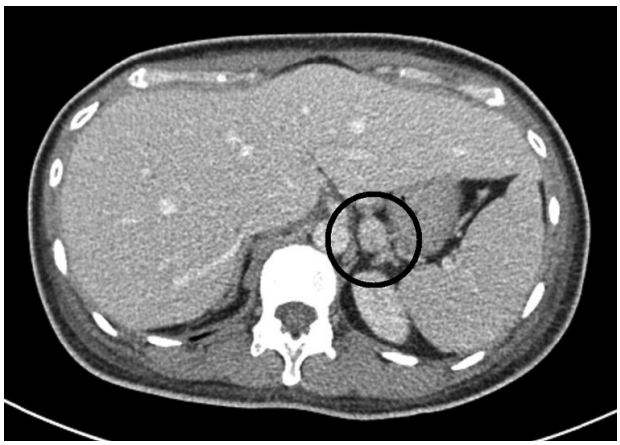

Figure 1. *Preoperative computed tomography (CT) scan showing left adrenal adenoma in the presented case*

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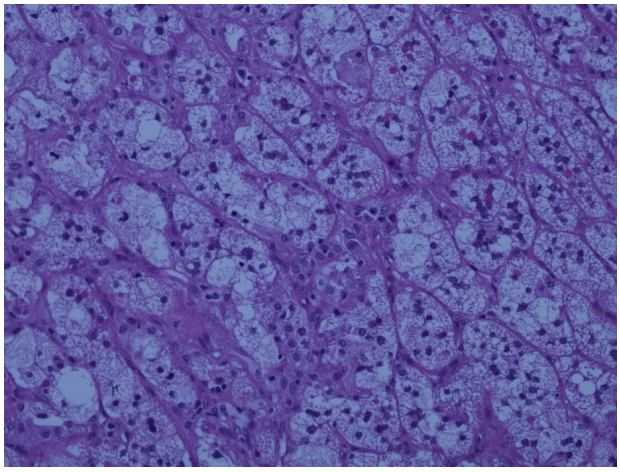

Figure 2. *Adrenal cortical adenoma histopathology showing characteristic tumour cells similar to normal adrenal cortex (zonae fasciculata), with abundant foamy vacuolated cytoplasm and well-defined cell borders (haematoxylin-eosin, ×200)*

(myocardial infarction, stroke...) and foetal (preeclampsia, placental abruption, stillbirth...) outcome [1].

Due to the physiologic increase in renin and aldosterone levels in pregnancy and the absence of pregnancy specific references ranges, the diagnosis of PA in pregnancy can be difficult to determine. The typical presenting findings are hypertension and hypokalaemia; however, normokalaemia may be detected in patients diagnosed with PA. An interesting aspect of PA during pregnancy is that the intensity of disease may be either improved or worsened.

Some women with PA in pregnancy remain normotensive and normokalemic, possibly because of the antimineralocorticoid and antikaliuretic effects of progesterone [2]. In certain cases, overexpression of luteinizing hormone choriogonadotropin receptor has been described in APAs possessing beta-catenin mutations, and the intensity of hyperaldosteronism is augmented by the elevated pregnancy-related blood levels of human chorionic gonadotropin [3, 4].

The diagnostic workup for PA in pregnant patients is the same as for nonpregnant patients; the diagnosis includes measurement of plasma aldosterone levels, plasma renin activity, or renin concentration.

The decision about the type of treatment for PA in pregnancy depends on gestational age and how difficult it is to control the hypertension and hypokalaemia. As mentioned, a subset of patients have remission in the degree of PA during pregnancy; in such cases, treatment can be avoided until after delivery. While surgery can be an effective treatment option for patients with unilateral disease (APAs or unilateral hyperplasia), mineralocorticoid receptor antagonists (MRAs) are an alternative in pregnant patients who are not candidates for surgery, although treatment with approved antihypertensive drugs and supplementation with potassium is the first choice. If MRA treatment is required in pregnancy, eplerenone appears to be a safe and effective option, but most reports describe the use of spironolactone with healthy male infants delivered without malformations, although there is at least one case of neonatal genital ambiguity following spironolactone treatment. [1, 5, 6]. Potassium-sparing diuretics (amiloride, triamterene) are an alternative for patients who are intolerant of MRAs [1].

Currently, there are no standardized guidelines for the treatment of PA in pregnancy, requiring clinicians to rely on their own judgment. Accordingly, early diagnosis and appropriate treatment with correctly timed therapy are the keys to keeping both the mother and the foetus safe.

Consent

A written informed consent form was obtained from the patient.

Conflict of interest

None declared.

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