

INTRODUCTION

Androgen excess is a common endocrine disorder in women of reproductive age with Polycystic Ovary Syndrome (PCOS) being one of the most frequent etiology.

Although ovaries are the main source of increased androgens in the syndrome, between 20 and 30% of patients with PCOS can have excess androgens from an adrenal source, manifested as elevated dehydroepiandrosterone sulfate (DHEAS) levels.

Other common causes of elevated DHEAS levels are Classic and Non-Classic Congenital Adrenal Hyperplasia (CAH). In all these conditions, DHEAS levels may vary from 60 - 340 mcg/dL. DHEAS levels more than 700 mcg/dL are highly suspicious for androgen-secreting neoplasm which warrants further investigation.

We present a case of a woman diagnosed with a variant of PCOS associated with an unusually elevated levels of DHEAS without any significant adrenal pathology on work-up.

CASE PRESENTATION

A 27-year old Caucasian female is seen by her GYN for delayed menstruation, gradual increase in terminal hairs on chin and face, and a thirty-pound weight gain within the last year. She had uneventful pregnancies in the past and reports no issues with conceiving.

Lab work up revealed normal prolactin, total testosterone, TSH, ACTH, and gonadotropin; however DHEAS level was noted to be markedly elevated to 684 mcg/dL which prompted Endocrine referral.

Physical examination was unremarkable aside for obesity with BMI of 32 and few terminal hairs on chin and neck areas.

Repeat DHEAS level was elevated to 782 mcg/dL. Work-up for Cushing's and CAH were negative. CT scan of abdomen and pelvis was ordered which did not reveal any concerning neoplastic process of the adrenals or ovaries.

Given her clinical picture and lack of concerning features on imaging, patient was started on oral contraceptives.

Lab Test	Value	Reference Range
DHEA-S	684	45-430 mcg/dL
DHEA-S (Repeat)	782	45-430 mcg/dL
FSH	6.8	Follicular phase 3.5-12.5 mIU/ml Ovulation phase 4.7-21.5 mIU/ml Luteal phase 1.7-7.7 mIU/ml
LH	10.0	Follicular phase 2.4-12.5 mIU/ml Ovulation phase 14.0-95.6 mIU/ml Luteal phase 1.0-11.4 mIU/ml
17-OH Progesterone	169	Mid Follicular: 23-102 ng/dL Surge: 67-349 ng/dL Mid Luteal: 139-431 ng/dL
Prolactin	17	0-29 ng/mL
24 UFC	9.2	4.0-50.0 mcg/24 h; Total vol 1600 mL
ACTH	21	9-46 pg/mL

DISCUSSION

PCOS can present with numerous biochemical abnormalities including elevated DHEAS.

Patients with PCOS demonstrate a generalized hypersecretion of adrenocortical products, basally and in response to ACTH stimulation.

Different theories have been proposed as to the mechanism of excess androgens in PCOS, including increased response to ACTH stimulation, alteration in adrenocortical biosynthesis via changes in steroid enzymes, and abnormally increased metabolism of cortisol resulting in increased ACTH.

To date, no specific genetic defects have been identified.

The implication of elevated levels of DHEA-S in PCOS is still poorly understood, although few studies in literature show better metabolic outcomes in PCOS patients with elevated adrenal androgens vs PCOS patients with normal adrenal androgen levels.

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