

Society for Endocrinology, Clinical Update 2007

A case of excess testosterone in a postmenopausal woman:

Dr P Kar, Dr A Armston, Dr A Odurny, Dr DD Sandeman & Prof NA Hanley

Endocrinology & Metabolism, Southampton University Hospitals NHS Trust & School of Medicine, University of Southampton, Southampton, SO16 6YD, UK

A 68-year old lady was referred due to male pattern baldness associated with progression of facial hirsutism over the last few years. Further examination showed hirsutism over her inner thighs and arms, without voice change or clitoromegaly. Serum analysis showed raised testosterone and androstenedione; DHEAS was normal (Table 1). Thyroid function was normal and serum gonadotrophins confirmed postmenopausal status. 1 mg overnight dexamethasone suppression showed adequate suppression (serum cortisol was below the lower assay limit of 28 nmol/LNA).

Table 1	Normal	Jan 2007	Feb 2007
Testosterone	0.35 - 2.6 nmol/l	8.6	9.5
SHBG	30-90 nmol/l	45	43
Testosterone/SHBG index	0.6 - 6.1%	19.1	22.1
Androstenedione	0 - 3.5nmol/l	4.6	
DHEA-Sulphate		<0.8	
17-OH progesterone		6.0 nmol/l	

Ultrasound scan of her right ovary showed it to be “slightly large” without any discrete mass. The left ovary was not identified. CT scan of her abdomen showed no evidence of malignancy though both ovaries were noted to be “slightly prominent for her age”. Both imaging techniques reported the adrenals as normal. Venous sampling was performed (Table 2).

Table 2	IVC	SVC	R Ovary	L Ovary	R Adrenal	L Adrenal
Testosterone	7.6	8.3	73.1	8.4	5.8	7.8
Oestradiol	120	<73	311	<73	<73	<73
Androstenedione	4.0	4.3	40.2	3.9	2.6	7.5
DHEA-S	1.1	1.0	1.1	1.0	1.2	1.2
Cortisol	241	263	279	228	242	334

Discussion:

Venous sampling yielded no cortisol gradient indicating that the adrenal veins were not cannulated as thought. However, the approximate 10-fold gradient for testosterone and androstenedione make the presumed diagnosis ‘testosterone-secreting tumour of the right ovary’. She has been referred to Gynaecology for right oophorectomy. In view of the post-menopausal status, bilateral oophorectomy is anticipated.

The right ovary appears to have retained some aromatase / CYP19 activity given the detection of estradiol, presumably converted from testosterone substrate. Furthermore, the right ovary appears to lack 5 alpha-reductase activity with androgen secretion via the classical rather than the alternative steroidogenic pathway as no sampling gradient was observed for dihydrotestosterone (data not shown) (Hanley & Arlt, TEM 2006, 10, 391-397).

In summary, this case shows the presentation, diagnostic approach and discussion of a presumed testosterone-secreting tumour of the right ovary. Post-operative outcome is awaited.

Note:

The patient is scheduled for her operation in the first week of October- and we hope to have histological diagnosis by the time the meeting is due ie Nov 07