Androgen secreting tumours, an infrequently diagnosed cause of raised testosterone

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Androgen secreting ovarian tumours account for 0.4% of all ovarian tumours and usually cause rapidly progressive symptoms of hirsuitism, oligo-amenorrhea and virilization.

We present the case of a 65 year old, postmenopausal lady who noticed coarse facial hair and a deepening voice over a period of three years. Examination revealed male pattern frontal baldness and coarse dark hair on the forearms; facial hirsuitism was difficult to assess as she removed her hair regularly. Blood tests showed testosterone of 13.1 nmol/l (ref range 0.5-2.6 nmol/l) with normal DHEAS, Androstenedione, 17 OHP, IGF-I and urinary free cortisol. MRI of the abdomen revealed bilateral adrenal nodules with a maximal diameter of 12 mm, and a left ovary which seemed enlarged for a patient of her age. A low dose dexamethasone suppression test revealed testosterone suppression to a minimum of 8.7 nmol/l and cortisol suppression to a minimum of 54 nmol/l. Further investigation of the adrenal nodules found normal Renin, Aldosterone as well as plasma and urinary metanephrines. Based on these results, an adrenal and ovarian vein catheterisation was performed in an aim to localise the source of the testosterone hypersecretion. A high testosterone level of 48.7 nmol/l was found in the right gonadal vein with a corresponding peripheral testosterone of 8.1 nmol/l, and a testosterone of 9.3 nmol/l in the left gonadal vein with a corresponding peripheral value of 8.9 nmol/l. Testosterone levels were not elevated in the adrenal veins. These results suggested an ovarian origin. Given the discrepancy between the result of venous sampling and MRI, bilateral oophorectomy was performed. Histology was diagnostic of bilateral ovarian Leydig cell tumours, the left larger than the right. Postoperatively, testosterone levels dropped to 1.0 nmol/l.

Conclusion: Dexamethasone non-suppression may be helpful and catheterisation of the ovarian and adrenal veins usually is, but correct localisation of the catheters is essential. This case illustrates the challenges that are encountered in the investigation of hyperandrogenism.