Testicular adrenal rest tumours masquerading as Leydig cell tumours in a 55 year old man with congenital adrenal hyperplasia.

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Introduction

Testicular adrenal rest tumours (TARTs) are a complication of congenital adrenal hyperplasia (CAH), stimulated by hyper-secretion of adrenocorticotropic hormone (ACTH). They are the main reason for fertility problems in men with CAH owing to compression of the seminiferous tubules, obstructive azoospermia and potentially permanent testicular damage. These lesions are benign and, in most patients present bilaterally. TARTs are treatable, but they can be misdiagnosed as Leydig cell tumours (LCTs) as the histopathological differentiation is difficult.[1]

Clinical case

We report a late diagnosis of non-classical 21-hydroxylase deficiency congenital adrenal hyperplasia (CAH) in a 55 year old gentleman. He was referred to endocrinology after finding an adrenal incidentaloma on MRI. Biochemical investigations into the nature of the adrenal lesion led to a surprising diagnosis of 21-hydroxylase deficiency CAH (table 1).

A short synacthen test demonstrated impaired adrenal function. Elevated serum concentrations of androstenedione, 17-hydroxyprogesterone (17OHP) and 21-deoxycortisol (21DOC) were suggestive of a diagnosis of late-onset CAH. Results of a 24-hour urine steroid profile revealed a markedly elevated 17-hydroxypregnanolone, pregnanetriol, and 11-oxo-pregnanetriol confirming the diagnosis of 21-hydroxylase deficiency.

His past medical history included bilateral orchidectomy for benign testicular Leydig cell tumours. There are reports in the literature of TARTs being misdiagnosed as LCTs. With the confirmed biochemical diagnosis of CAH all of the available pathological material was reviewed. The re-examined tumours were consistent with TARTs.

Table 1: Results of biochemistry investigations with laboratory reference intervals (where available).

	Result	Reference interval (units)
Testosterone	27.1	7 – 30 nmol/L
Androstenedione	8.4	<5.5 nmol/L
17-hydroxyprogesterone (17OHP)	>151.5	<6.0 nmol/L
11-deoxycortisol (11-DOC)	0.7	<2.0 nmol/L
21-deoxycortisol (21-DOC)	>43.4	<2.0 nmol/L
Dehydroepiandrosterone sulphate (DHEAS)	1.4	nmol/L
Post-synacthen cortisol	154	>450 nmol/L
Renin	156.2	Undetectable – 52 mIU/L

Testicular adrenal rest tumours (TARTs)

Histopathologically, TARTs are commonly mistaken for Leydig cell tumours. Both demonstrate a proliferation of polygonal cells with abundant granular, eosinophilic cytoplasm (figure 1). A few subtle features that are more common to TARTs such as fibrous bands, prominence of lipofuscin and adipose metaplasia, allow differentiation (figure 2). Another helpful feature is the absence of Reinke crystals (cytoplasmic rod-like crystalloids), a characteristic finding in Leydig cell tumours.[1]

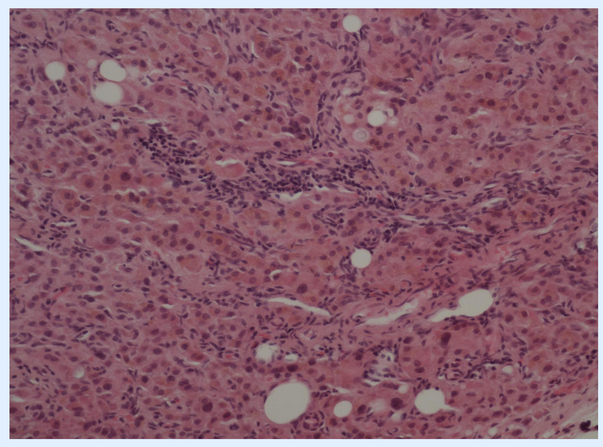

Figure 1: x200 H&E medium power view. Note the eosinophilic cytoplasm and cytoplasmic pigment.

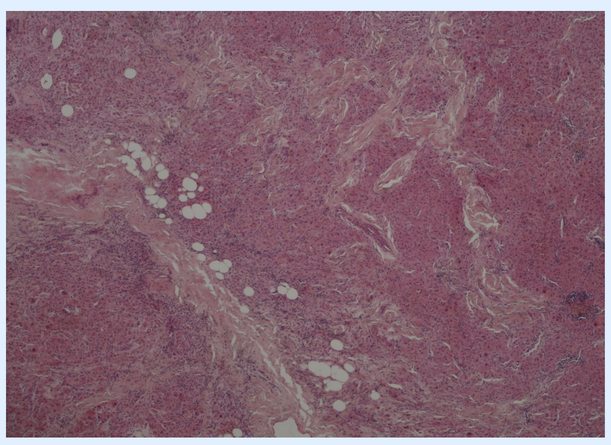

Figure 2: x40 H&E. TART from right testis. Note the increased fibrous bands and adipose metaplasia.

Clinical lessons

It is well documented in the literature that TARTs in men with CAH are commonly mistaken for LCTs due to similarities in morphology. Recognition of this disease entity is important when evaluating testicular masses in men as early diagnosis could prevent irreversible testicular damage and infertility.

References

1. Claahsen-van der Grinten HL, Otten BJ, Stikkelbroeck MM, Sweep FC, et al. Testicular adrenal rest tumours in congenital adrenal hyperplasia. *Best Pract Res Clin Endocrinol Metal 2009*; 23: 209-220.