Steroid abuse in a patient with Cushing’s disease

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Case history:
We report a 34 year old man presenting with an 8month history of lethargy and weakness and 1year history of hypertension. He attended a gym to improve muscle strength and later admitted to injecting anabolic steroids (trebolone enanthate and testosterone) three months before presentation in an attempt to alleviate his weakness. On examination he was Cushingoid.

Investigations and method:
Twenty-four hour urine collections showed markedly elevated urinary free cortisols (UFC). He had an elevated testosterone and low insulin-like growth factor 1 (IgF1) in keeping with anabolic steroid abuse. There was loss of diurnal cortisol rhythm and elevated adrenocorticotropic hormone (ACTH). However cortisol levels were suppressed with the low dose dexamethasone test (LDDT). MRI pituitary showed a small hypodense area on the right side.

Results and treatment:
Given his discrepant results and history of steroid abuse he was observed for four months. He became increasingly Cushingoid requiring additional anti-hypertensives. Repeat 24-hour UFCs and LDDT were similar. A 28day collection of early morning urine and nocturnal saliva for cortisol were elevated and did not show cycling. Inferior petrosal sinus sampling demonstrated a significant central to peripheral ACTH gradient. A random urine sample taken without warning proved negative for excessive anabolic steroids. He proceeded to surgery and discrete adenomatous tissue was removed on the right side staining for ACTH. Blood pressure normalised off antihypertensives, his Cushing’s features resolved, post-op cortisols were unmeasurable and the gonadal axis and IgF1 levels recovered.

Conclusions and points for discussion:
Anabolic steroid abuse is an increasing public health problem. Cushing's syndrome is difficult to diagnose in the setting of anabolic steroid abuse particularly when results are conflicting on initial testing. This case highlights the value of close observation and also of repeated evaluation in such situations.