Evaluation of Glucocorticoid Secretion in an Adrenal Incidentaloma Cohort

O Mason[1], G Ensah[1], B Keevil[2], FWF Hanna[3] and B G Issa[1].
1. Manchester University Foundation Trust, Department of Endocrinology 2. Manchester University Foundation Trust, Department of Biochemistry 3. University Hospital of North Staffordshire.

Introduction

Adrenal incidentalomas (AI), defined as clinically inapparent adrenal masses discovered during radiological investigation for an unrelated condition[1], are being frequently seen in endocrine clinics due to increased cross-sectional imaging, with a 4% prevalence (7% in patients >70years) in abdominal CT scans[2]. The majority of these tumours are benign and non-functional, but identifying malignancy and functionality is important. Excess cortisol production is the commonest endocrinopathy associated with AI, with a reported prevalence of ~10%[2]. Even moderately raised serum cortisol concentrations are associated with increased risk of Type 2 Diabetes Mellitus (DM), hypertension (HTN), obesity and osteoporosis[3]. Due to the high risk of complications, all patients with AI should be screened for cortisol excess. The overnight 1mg dexamethasone suppression test (ONDST) is one of the recommended tests for assessing glucocorticoid secretion[1]. Normal cortisol secretion is defined as a post dexamethasone cortisol of ≤50 nmol/l (At 50nmol/L cut-off, the sensitivity is 95% and the specificity is 80% for this test[5]). Patients without clinical signs of Cushing's syndrome and with post dexamethasone cortisol of 51-138 nmol/l are defined as having possible autonomous cortisol secretion and those with a post dexamethasone cortisol of >138 nmol/l as having autonomous cortisol secretion[1].

Objectives

To evaluate the prevalence of excess cortisol production in a cohort of AI patients referred to our hospital.

Methods

Patients referred to our endocrine clinic from July 2016 to May 2018 for AI follow-up underwent the ONDST. Patients' age and BMI were recorded. In our hospital we combine the overnight dexamethasone suppression test with measurement of diurnal variation for serum cortisol and salivary cortisol and cortisone and we measure salivary cortisol and cortisone with post dexamethasone serum cortisol sample

We retrospectively collected data (morning and midnight serum cortisol and salivary cortisol and cortisone, post dexamethasone serum cortisol and salivary cortisol and cortisone) on a cohort of patient. We also recorded age, BMI, smoking status, tumour lateralisation and size, osteoporosis, Type 2 diabetes and hypertension.

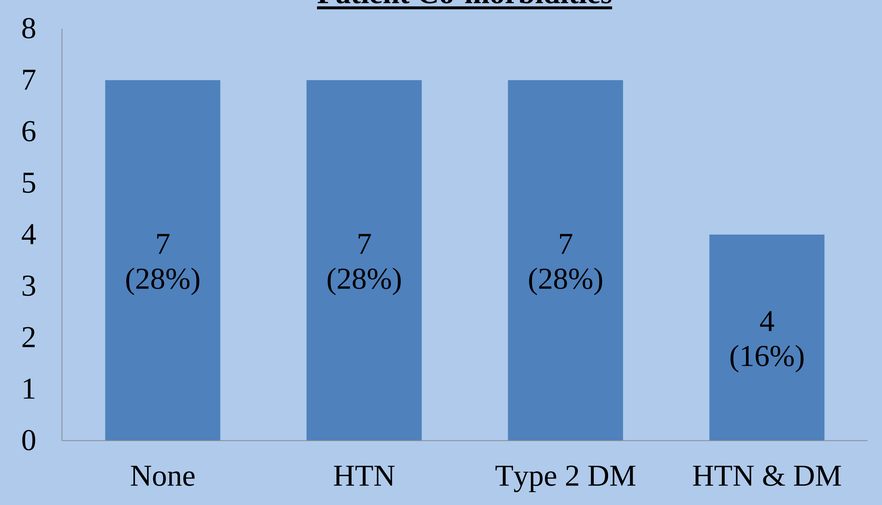
At 50nmol/L serum cortisol cut-off, the sensitivity is 95% and the specificity is 80% for this test[5].
We also ascertained whether patients had been diagnosed with HTN, Type 2 DM, both or neither.

Results

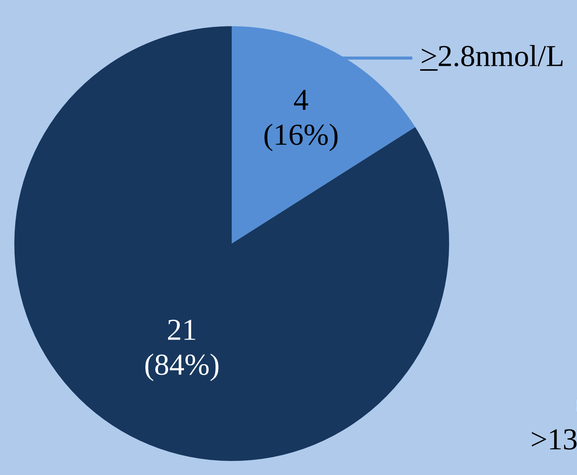
A total of 25 patients underwent the ONDST; 16 (64%) women and 9 (36%) men. The median age was 55.48±7.99yrs. Median BMI was 32.40±8.10kg/m^2. The lesions were located on the left adrenal gland in 9 (36%) patients, on the right in 2 (8%), bilaterally in 9 (36%). In 5 patients (20%) the location of the lesion was not specified. The average lesion diameter was 20.06±8.83.

A total of 16 (64%) of patients failed to suppress serum cortisol levels to below 50nmol/L, while just 4 (16%) of patients returned midnight salivary cortisol concentrations of above 2.8nmol/L.

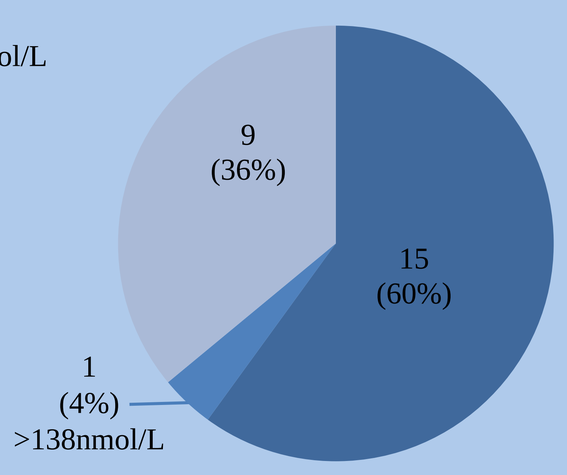
Patient Co-morbidities



Number of Patients and Midnight Salivary Cortisol Concentrations



Number of Patients and Post-ONDST Serum Cortisol Concentrations



Discussion

The prevalence of excess cortisol secretion in AI, based on the ONDST, is higher than previously reported, at 64%. Earlier studies have found autonomous cortisol secretion prevalence in AI patients to be 5.3%[6.] Our study was a small study and which may have caused some bias and resulted in the anomalous results. There is discordance between the results of the ONDST and the diurnal rhythm evaluation. The value of measuring dexamethasone in ONDST needs further evaluation.

References

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Adrenal and steroids
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