

# Simultaneous presentation of Graves' Thyrotoxicosis and Addison's disease presenting as incipient Adrenal crisis

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## Introduction

- Graves' Thyrotoxicosis and Addison's disease are disorders with a strong auto-immune basis.
- Primary hypothyroidism and Addison's disease are recognised components of Polyglandular autoimmune syndrome type II (PGA-II).
- Despite its autoimmune etiology, Graves disease is not commonly associated with PGA-II.
- We present a case of a patient with newly diagnosed Graves' disease presenting in incipient adrenal crisis due to unrecognized Addison's disease.

## Case report

- A 35 yr old gentleman presented with headache, paraesthesia, heat intolerance, and weight loss associated with severe fatigue, nausea and vomiting.
- Graves' Thyrotoxicosis was suspected and confirmed biochemically (TSH <0.01 mU/L, FT4 30.7 pmol/L, FT3 8.6 pmol/L). He was treated with Carbimazole 40 mg once daily for a few weeks without any symptomatic improvement.
- He was referred to our unit with progressive weight loss, dizziness and fatigue.
- On re-assessment he looked unwell and was deeply tanned and hypotensive. Addison's disease co-presenting with Graves' disease was suspected.
- ACTH stimulation with tetracosactide (Synccathen) showed no incremental cortisol response (baseline cortisol 48 nmol/litre) and elevated serum ACTH (679 ng/L) confirmed primary adrenal insufficiency.
- Graves' Thyrotoxicosis was treated with Carbimazole. Catabolic symptoms resolved completely with glucocorticoid and mineralocorticoid replacement therapy.

## Discussion

- Thyroid dysfunction and Addison's disease are recognised components of Polyglandular autoimmune syndrome type II (Schmidt syndrome).
- Primary hypothyroidism is the norm and Graves' Thyrotoxicosis is very rarely recognized as part of the syndrome.
- It is well recognized that occult Addison's disease should be suspected in patients who fail to improve symptomatically after commencing Levothyroxine for primary hypothyroidism.
- This case highlights the fact that patients presenting with Graves' disease and Addison's simultaneously are at risk of incipient adrenal crisis.
- A high index of suspicion remains the cornerstone of diagnosis.

### Types of endocrine and nonendocrine autoimmune syndromes associated with adrenal insufficiency

Disorder	Prevalence, percent
<b>Polyglandular autoimmune syndrome type I</b>	
Endocrine	
Hypoparathyroidism	89
Chronic mucocutaneous candidiasis	75
Adrenal insufficiency	60
Primary hypogonadism	45
Hypothyroidism	12
Type 1 diabetes mellitus	1
Hypopituitarism	<1
Diabetes insipidus	<1
Nonendocrine	
Malabsorption syndromes	25
Alopecia totalis or areata	20
Pernicious anemia	16
Chronic active hepatitis	9
Vitiligo	4
<b>Polyglandular autoimmune syndrome type II</b>	
Endocrine	
Adrenal insufficiency	100
Autoimmune thyroid disease	70
Type 1 diabetes mellitus	50
Primary hypogonadism	5-50
Diabetes insipidus	<1
Nonendocrine	
Vitiligo	4
Alopecia, pernicious anemia, myasthenia gravis, immune thrombocytopenia purpura, Sjogren's syndrome, rheumatoid arthritis	<1

Data from: Leshin M, Am J Med Sci 1985; 290:77, and Neufeld M, Maclaren NK, Blizzard RM, Medicine 1981; 60:355.

### Hyperpigmentation in Addison's disease



(A) A 57-year-old woman presented with symptoms of primary adrenal insufficiency secondary to autoimmune Addison's disease. Diffuse skin hyperpigmentation had developed during the last year, as illustrated by her facial appearance.  
(B) The hands demonstrate increased pigmentation of the palmar creases and wrists compared to a normal female control (far right).  
(C) With long-term glucocorticoid and mineralocorticoid therapy, her hyperpigmentation resolved, as shown by the normal palmar skin pigmentation in the patient at age 83.  
Of note, she wears a medical bracelet indicating her requirement for glucocorticoids in case of severe illness.

### Incidence of other endocrine and autoimmune diseases in 365 patients with autoimmune adrenal insufficiency

Disease	Incidence, percent
Thyroid disease	
Hypothyroidism	8
Nontoxic goiter	7
Hyperthyroidism	7
Gonadal failure	
Ovarian	20
Testicular	2
Type 1 diabetes mellitus	11
Hypoparathyroidism	10
Pernicious anemia	5
None	53

Compiled from multiple reports.