

## Adrenal Gland

- Antibodies associated with **Addison's disease**.
- Present in 80% of women and 10% of men with Addison's disease.
- Investigate with morning **cortisol**, **ACTH** and synacthen test.
- Antibodies rarely useful clinically.

To see the staining pattern produced by **anti-adrenal gland IgG antibodies**, detected by indirect immunofluorescence, visit the website of the Clinical Immunology Department in Birmingham.  
<http://medweb4.bham.ac.uk/websites/clinicalimmunology/index.asp>

## Testes

Antibodies against Leydig cells in the testes may be associated with testicular failure. Very rare.

## Ovaries

Anti-ovarian antibodies are associated with premature ovarian failure (<40 years old) and may also be seen in patients with an autoimmune polyglandular syndrome.

## Diabetes

(excessive serum glucose due to impaired insulin secretion or action)

### Type 1 diabetes

- Autoimmune destruction of pancreatic beta cells (source of insulin).
- T cell mediated disease (Type IV hypersensitivity)
- Associated with islet cells autoantibodies
  - these decrease as pancreatic beta cells are destroyed.
- Usually presents at young age but can present later.



### Immunology investigations:

- Islet cell antibodies
- Screen for coeliac disease
  - Antibodies against endomysium/tissue transglutaminase
- Consider secondary immunodeficiency
  - Impaired neutrophil function

### Symptoms:

Broad spectrum of clinical symptoms

- Coronary heart disease
- Cerebrovascular disease
- Retinopathy, glaucoma, cataracts
- Nephropathy
- Peripheral neuropathy
- Ulcers

### Type 2 diabetes

- Insulin resistance, associated with obesity.

# ENDOCRINOLOGY

Autoimmune endocrinopathies are associated with antibodies to specific targets in the affected tissue, often enzymes.

## Steroid cell antibodies

Target = 17a hydroxylase or 21a hydroxylase

- Not very specific.
- Cause various endocrinopathies depending on target antigen.
- Detected by indirect immunofluorescence on tissue sections.
- No role in monitoring or prognosis.

## Thyroid

### TPO antibodies

Target = thyroid peroxisome (Aka thyroid microsomal antibody)

- Found in **HYP**Othyroidism (95%) and **HYPER**thyroidism (90%).
- Useful for showing autoimmune etiology in thyroid disease.
- No indication for repeat measurement, monitoring or prognosis.
- No value in measuring if patient already on thyroxine.

## TSH receptor antibodies

Target = TSH receptor

- Some, but not all, TSH receptor antibodies stimulate TSH receptor, causing **GRAVES DISEASE**.
- These antibodies are **PATHOGENIC** and can cross the placenta causing **NEONATAL THYROTOXICOSIS**.
- These antibodies persist, even if thyroid gland removed.
- Can also be found in **HYP**Othyroidism.

## Thyroglobulin antibodies

Target = thyroglobulin

- Can interfere with thyroglobulin assays.
- Should be measured in all samples analysed for thyroglobulin.
  - Thyroglobulin may be measured in patients with thyroid cancer.
- Found in in **HYP**Othyroidism and **HYPER**thyroidism.
- No role in disease diagnosis, monitoring or prognosis.

## Primary immunodeficiency + endocrinopathy

Some very rare primary immunodeficiencies are associated with endocrinopathy.

### 1. APECED

(Autoimmune polyendocrinopathy, candidiasis and ectodermal dysplasia)

- Due to mutations in the AIRE (autoimmune regulator) gene, which plays a role in deletion of autoreactive T cells.

### 2. IPEX

(Immune dysregulation, polyendocrinopathy, enteropathy, X-linked)

- Due to mutations in FOXP3, a critical transcription factor in regulatory T cells which suppress autoimmune cells.

## Islet cell antibodies

Targets = GAD, IAA2, insulin

- Detected by indirect immunofluorescence on monkey pancreas sections.
- Specific for Type I diabetes but not very sensitive as only present in a narrow time window.
- Useful in showing autoimmune involvement in late onset diabetes.
- Limited use in diagnosis and no treatment, even if results are positive.
- Not useful for monitoring disease.
- May be useful in the future for prognosis.
- Can also test for antibodies to the individual targets in specialist labs.
- GAD (glutamic acid decarboxylase) antibodies can also be associated with stiff person syndrome.

To see the staining pattern produced by **anti-Islet cell IgG antibodies**, detected by indirect immunofluorescence on sections of monkey pancreas, visit the website of the Clinical Immunology Department in Birmingham.  
<http://medweb4.bham.ac.uk/websites/clinicalimmunology/index.asp>