



INSULIN + ISLET CELL ANTIGEN

FUNCTION:

Islet cells are found in the region of the pancreas that contains its hormone-producing cells. Hormones produced in the islets are secreted directly into the blood flow by different types of cells including the beta-cell. Insulin is a hormone that plays a role in the regulation of carbohydrate and fat metabolism. Insulin triggers cells in the liver, muscle and fat tissue to take up glucose from the blood and store it as glycogen in the liver and muscle.

ANTIBODIES APPEAR:

Insulin Autoimmune Hypoglycaemia³
 Insulinoma³
 Type 1 Diabetes^{1 4 5}
 Unexplained Hypoglycaemia³

KNOWN CROSS-REACTIONS:

CLINICAL SIGNIFICANCE:

Beta cells in the islets are selectively destroyed by an autoimmune process in type 1 diabetes. Multiple islet cell antibodies (ICAs) at diagnosis of diabetes can predict future complete beta-cell failure; after diagnosis ICA development in patients who were antibody negative at diagnosis indicate decreasing beta-cell function.¹ ICAs may precede diabetic symptoms by several years, even in people with normal glucose tolerance, but these titers are not always followed by diabetes; ICAs are often present at or soon after the clinical onset of insulin-dependent diabetes, but their prevalence decreases thereafter.^{4 5} Insulin antibodies have been part of the first-line assessments for patient who fulfill Whipple's triad.² Coupling insulin C-peptide antibodies can assist in the differential diagnosis. For example, an elevated concentration of insulin, C-peptide and proinsulin raises the possibility of insulinoma; on the other hand, inappropriately raised serum insulin with low or very low C-peptide in unexplained hypoglycaemia can justifiably raise the possibility of surreptitious insulin self-administration.³

References:

1. Borg H, et al. A 12-year prospective study of the relationship between islet antibodies and -cell function at and after the diagnosis in patients with adult-onset diabetes. *Diabetes*, 2002; 51:1754-1762.
2. Cryer PE, et al. Evaluation and management of adult hypoglycemic disorders: An endocrine society clinical practice guideline. *J Clin Endocrinol Metab*, 2009; 94:709-28.
3. Ismail AAA. Testing for insulin antibodies is mandatory in the differential diagnosis of hypoglycaemia in non-diabetic subjects. *Clin Endocrinol*, 2011; Accepted Article:doi: 10.1111/j.1365-2265.2011.04259.x.
4. Lendrum R, et al. Islet-cell, thyroid, and gastric autoantibodies in diabetic identical twins. *Br Med J*, 1976; 1:553-556.
5. Schölin A, et al. Islet antibodies and remaining b-cell function 8 years after diagnosis of diabetes in young adults: a prospective follow-up of the nationwide Diabetes Incidence Study in Sweden. *J Intern Med*, 2004; 255:384-391.