Year 2003 Paper two: Questions supplied by Tricia

Question 86

Unawareness of hypoglycaemia is predominantly due to failure of secretion of which one of the following hormones?
A. Glucagon
B. Adrenaline
C. Cortisol
D. Growth hormone
E. Somatostatin

Answer B

Extract from up to date
Impairment of counterregulatory responses — The glucagon response to hypoglycemia, although normal at the onset of diabetes, becomes markedly impaired or absent during the first few years in patients with type 1 diabetes. Why this occurs is poorly understood, because in these patients glucagon responses to other stimuli such as amino acids are normal. One possible mechanism is continued insulin availability, since suppression of insulin release in normal subjects is partially responsible for the hypoglycemia-induced rise in glucagon secretion.

Patients with deficient glucagon secretion are dependent upon epinephrine to protect against hypoglycemia. However, the epinephrine response also becomes impaired in many patients later in the course of the disease. These patients are at much greater risk of developing hypoglycemia, and because of the absence of the epinephrine-induced early-warning symptoms it is often severe (called hypoglycemia unawareness). It has been estimated, for example, that patients with diminished glucagon and epinephrine responses have a 25-fold increase in the frequency of severe hypoglycemia during intensive insulin therapy. These patients may be particularly prone to develop hypoglycemia during sleep, because sleep itself appears to impair counterregulatory responses.

Harrisons mechanism for unawareness of hypoglycamia


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