IGF-1

Description	Polypeptide responsible for many effects of growth hormone
Indication	Diagnosis and monitoring of acromegaly and growth hormone deficiency, diagnosis of tumoural hypoglycaemia
Additional Info	Insulin-like growth factor-1 (IGF-1) is predominantly synthesised in the liver, stimulated by growth hormone (GH) from the pituitary. GH release is stimulated by growth hormone releasing hormone (GHRH) and inhibited by somatostatin from the hypothalamus. IGF-1 exerts negative feedback on GH and GHRH. Circulating IGF-1 is bound to several IGF binding proteins (IGFBPs), of which IGFBP-3 is the most important. IGF-1 has growth promoting and metabolic effects: it increases longitudinal bone growth, DNA synthesis, RNA synthesis, cell proliferation, tissue glucose uptake and protein synthesis, and decreases levels of cholesterol and triglycerides and inhibits apoptosis. Serum IGF-1 is the best biochemical marker of clinical disease activity in acromegaly. IGF-1 production is decreased in IGF-2 mediated tumoral hypoglycaemia through IGF-2-mediated decrease in growth hormone secretion.
Concurrent Tests	N/A
Dietary Requirements	N/A
Interpretation	IGF-1 usually reflects the integrated secretion of GH, with high levels during late adolescence, declining throughout adulthood; age- and gender-matched reference ranges are applied. Levels also reflect nutritional status. <u>High IGF-1</u> • Acromegaly, although subtly elevated GH levels may not uniformly induce high IGF-1 levels; a glucose tolerance test of GH suppressibility should be performed <u>Low IGF-1</u> • Malnutrition • Liver disease • Hypothyroidism • Poorly controlled diabetes • Growth hormone deficiency, although normal levels of IGF-I and IGFBP-3 do not exclude GH deficiency in adults; a GH stimulation test should be performed • Tumoral hypoglycaemia (if insulin and IGF-1 low and tumoral hypoglycaemia suspected, measure IGF-2)
Collection Conditions	N/A
Frequency of testing	As required