The majority of patients with insulin receptor mutations and hyperinsulinaemia do not have an acromegaloid phenotype. However, a subset of patients with genetic defects in the insulin receptor have acromegaloid features in addition to hyperinsulinaemia, acanthosis nigricans, and hyperandrogenaemia (‘acromegadal variant of type A insulin resistance’). From a pathophysiological viewpoint, these patients differ from our patient. The former patients have reduced insulin binding and insulin-stimulated autophosphorylation. Interestingly, IGF-I receptors of cultured fibroblasts from some of these patients share the inherent defects of insulin receptor function. 20

The differential diagnosis of patients with acromegaloid features in the absence of GH excess (Table 2) also includes pachydermoperiostosis and a number of rare genetic syndromes described in some kindreds.21-26 A case of pseudoacromegaly in a patient receiving an unusually high dose of minoxidil for a long period has been reported in the literature.27 Unlike insulin-mediated pseudoacromegaly, there is no insulin resistance in pachydermoperiostosis and the other syndromes associated with acromegaloidism.28 The characteristic findings of pachydermoperiostosis include thickening of the periosteum (skull or the long bones) or the skin, acrolysis, and alopecia.29-31 The rare genetic syndromes associated with acromegaloid features are almost always associated with abnormalities of the skin, the mucosa, and its appendages, e.g. cutis verticis gyrata (longitudinal folds and furrows in the scalp), keratitis, thickened mucosa, and hypertrichosis.21-23,25,26 The underlying cause of these rare syndromes remains unknown. A pericentric inversion of chromosome 11 segregating with acromegaloid features has been reported in one family.28 In most patients with non-pachydermoperiostosis acromegaloid syndromes, the features of acromegaly are confined to the face.28

This report describes a case of insulin-mediated pseudoacromegaly treated with fenofibrate.

Dib et al demonstrated impaired activation of insulin receptor substrate (IRS)-1-associated PI 3-kinase by insulin, an abnormality of potential relevance to insulin’s defective metabolic signalling. This finding provides a plausible explanation for the severe insulin resistance seen in these patients. Inhibition of PI 3-kinase activity has been shown to impair insulin-stimulated glucose transport in adipocytes and muscle.16-19 Dib et al also confirmed the preservation of normal insulin-stimulated mitogenesis in fibroblasts of patients with insulin-mediated pseudoacromegaly.13 Kausch et al provided further evidence for impaired insulin-stimulated PI 3-kinase activity as an underlying defect contributing to the severe insulin resistant state in this condition.14

The clinical and biochemical features in ‘insulin-mediated pseudoacromegaly’

- Frontal bosselation
- Macroglossia
- Widely separated teeth
- Prominent mandible and prognathism
- Large hands and feet (increase in ring size and shoe size)
- Little subcutaneous fat on arms and legs
- Weight gain
- Acanthosis nigricans
- Skin tags over the neck and upper chest
- Oligomenorrhea
- Hirsutism
- Acne
- Prominent, well-developed muscles
- Enlargement of ears
- Increased sweating
- Fatty liver
- Abdominal muscle cramps
- Normal IGF-I levels
- Low/normal growth hormone levels (random or during oral glucose tolerance test)
- Hyperinsulinaemia
- Diabetes mellitus
- Hypertriglyceridaemia
- Increased total and free testosterone concentration
- Reduced sex hormone binding globulin (SHBG) concentration
- Increased luteinizing hormone (LH) concentration

The underlying cause of these rare syndromes remains unknown. A pericentric inversion of chromosome 11 segregating with acromegadal features has been reported in one family.28 In most patients with non-pachydermoperiostosis acromegadal syndromes, the features of acromegaly are confined to the face.28

This report describes a case of insulin-mediated pseudoacromegaly.

Table 2. Conditions associated with pseudoacromegaly

- Insulin-mediated pseudoacromegaly (possibly due to impaired insulin-stimulated PI 3-kinase activity)
- Acromegaloid variant of type A insulin resistance
- Pachydermoperiostosis
- Rare genetic acromegaloid syndromes