*Letters to the editor***Effect of insulin-like growth factor-I therapy on erythropoietin concentrations in extreme insulin resistance**

Dear Sir,

Further to the recent report on the use of recombinant insulin-like growth factor I (rhIGF-I) to improve lipid profile in Type 2 diabetes [1] we would like to report a new finding noted during the therapeutic use of rhIGF-I. There is evidence to support a role for IGF-I in the regulation of erythropoiesis. Serum IGF-I but not erythropoietin concentrations correlate well with haematocrit values in uraemic patients [2]. RhIGF-I has been shown to stimulate erythropoiesis in hypophysectomised rats [3]. In this study rhIGF-I infusions given subcutaneously caused a significant rise in erythropoietin concentrations. The effect of rhIGF-I infusions on erythropoietin concentrations in normal humans has not to our knowledge been studied.

RhIGF-I has been used therapeutically in extreme insulin resistance where its effects on lipids and lipoproteins have been described [4, 5]. Subsequent larger studies have suggested a clinical role where insulin treatment is ineffective [6]. We have studied the effect of rhIGF-I on erythropoietin concentrations in a 17-year-old boy with the Mendenhall syndrome, a rare extreme insulin resistant state. Venous sampling was performed on two occasions prior to, during and after 40 mg rhIGF-I given intravenously by an infusion pump over 48 h. Erythropoietin was measured in plasma by EPO-Trac TM Assay (Incstar Ltd., Wokingham, UK). Erythropoietin concentrations rose from 11.6 to 43.7 mU/ml (reference interval: 15–30 mU/ml). Comparison of erythropoietin concentrations prior to and after the first 24 h of rhIGF-I infusion showed a significant rise from 22.0 ± 3.2 to 33.4 ± 3.1 mU/ml, $p < 0.02$ (mean and SEM, $n = 6$, Fig. 1). RhIGF-I by infusion appears to increase erythropoietin concentrations in this rare condition. The mechanism by which rhIGF-I has this effect is not clear but in animal studies it stimulates erythropoietin production [3]. Further studies of the effect of rhIGF-I on erythropoietin concentrations in normal individuals would be of interest. Recombinant growth hormone has been used in uraemic children with increased IGF-I concentrations noted and slight improvement of anaemia [7]. Given that rhIGF-I also has growth promoting effects our finding could suggest that therapeutic use may be of potential benefit in growth retarded, anaemic children with chronic renal failure.

Yours sincerely,

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Fig. 1. Erythropoietin concentrations prior to and after 24-h rhIGF-I infusion. Values are shown as mean $\pm$ SEM, $n = 6$

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