



Evaluation of ALP value in early prediction of the effects of growth hormone treatment in children with growth hormone deficiency (GHD)

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The authors declare no conflict of interest

Background:

Serum bone turnover markers may serve as parameters for predicting the growth response to growth hormone (rhGH) treatment.

Objective and hypotheses:

Assessment of the alkaline phosphatase (ALP) value in early prediction of the effects of rhGH treatment in children with growth hormone deficiency (GHD).

Material and methods:

The study group consisted of 50 children with GHD. ALP, bone-ALP, vitamin D and IGF-1 concentrations were evaluated at baseline and after 6 and 12 months of rhGH treatment. The group was divided into two subgroups depending on puberty status ($n = 15$ prepubertal, $n = 35$ pubertal). The subgroups did not differ significantly in terms of GH deficiency defined as the maximum secretion of growth hormone in tests. IGF-1 concentration was normalized for bone age.

Results:

ALP after 6 months of rhGH treatment was significantly higher in the pubertal group ($p < 0.05$). In the prepubertal children there was a tendency for increased ALP, but it was not statistically significant. In the following 6 months of rhGH treatment, ALP levels were not significantly altered. There was a statistically significant weak correlation between ALP at baseline and IGF-1 SD ($r = 0.29$) in the pubertal group. No such correlation was found in the prepubertal children. In the prepubertal children a correlation was found between ALP at baseline and a decrease in height deficiency SD ($r = 0.26$). In the pubertal group, there was no correlation between ALP and the growth response in the first year of treatment.

Fig.1 ALP value in prepubertal and pubertal groups

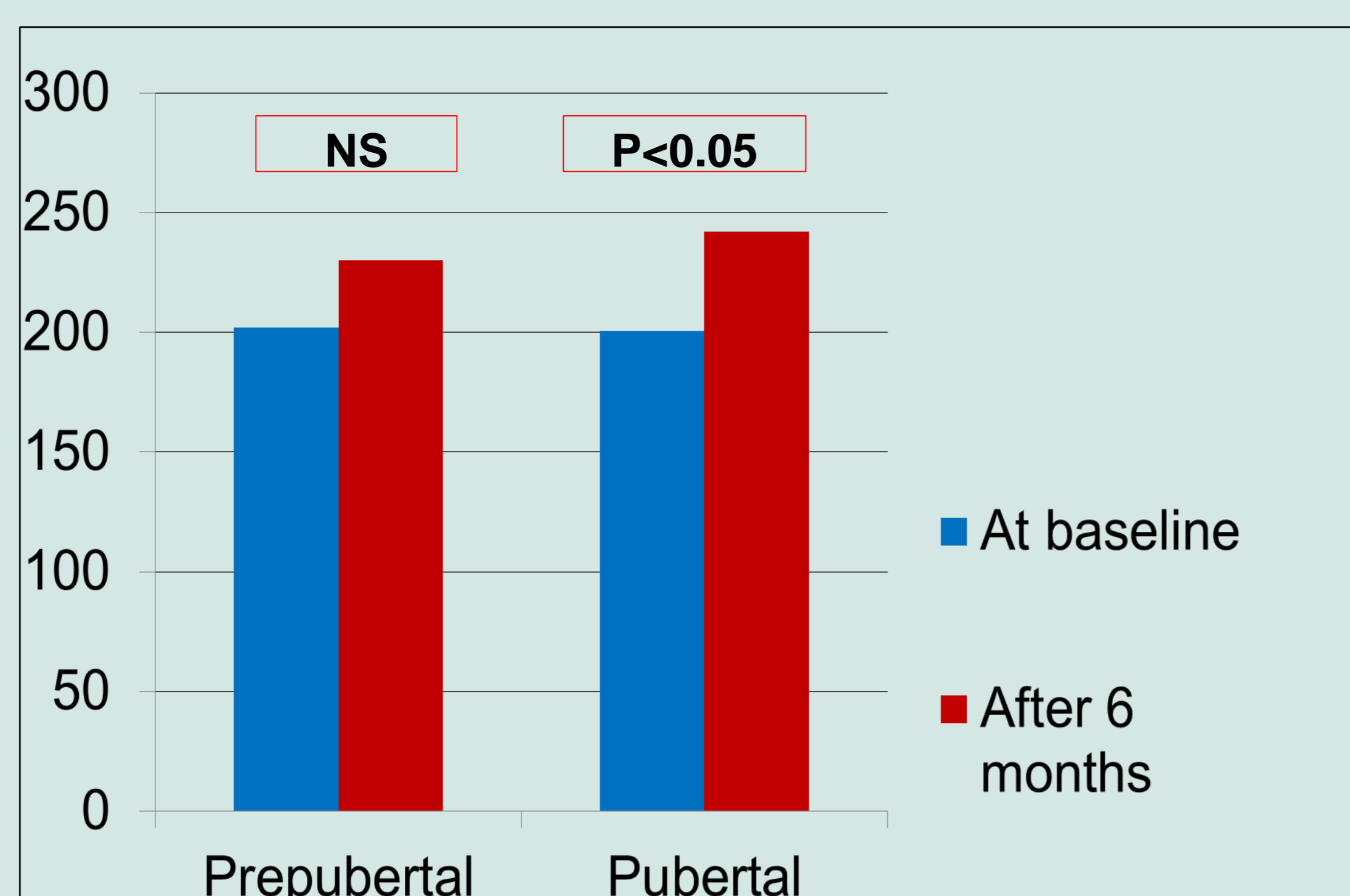
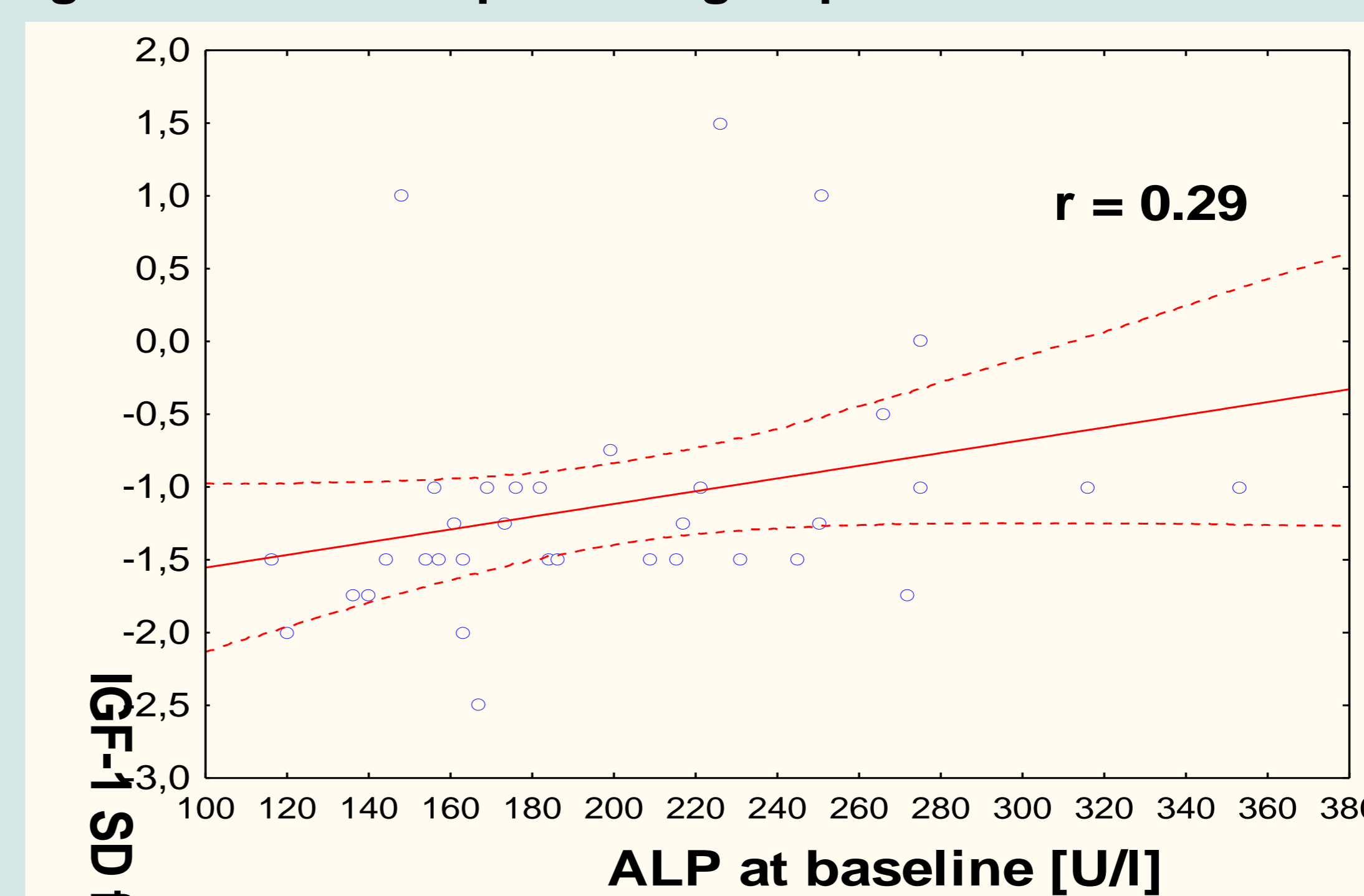


Fig.2 Correlation between ALP and IGF-1 SD for bone age at baseline in pubertal group



Conclusions:

The results suggest that bone turnover is increased after 6 months of rhGH treatment and reaches comparable levels after 12 months of therapy. In prepubertal children ALP may be a useful marker in predicting the growth response to rhGH treatment. In pubertal children ALP cannot be used as an isolated parameter in predicting the effects of rhGH treatment.

