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Original Article:

Trends of correlations between serum levels of growth hormone and insulin-like growth factor-I in general practice.

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Abbreviations: Body mass index (BMI), Growth hormone (GH), GH deficiency (GHD), GH-releasing hormone (GHRH), Insulin-like growth factor (IGF)-I, nonalcoholic fatty liver disease (NAFLD), non-GH-related diseases (NGRD).

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Abstract

Serum levels of growth hormone (GH) and insulin-like growth factor (IGF)-I are crucial in the diagnosis and management of GH-related diseases. However, these levels can be affected by nutritional and metabolic status. To elucidate the correlations between GH and IGF-I in various conditions, a retrospective analysis was performed for adult patients in which GH levels were examined by general practitioners during the period from January 2019 to December 2021. Of 642 patients, 33 patients were diagnosed with acromegaly, 21 were diagnosed with GH deficiency (GHD), and 588 were diagnosed with non-GH-related diseases (NGRD). In contrast to the positive correlations found between the levels of GH and IGF-I in patients with acromegaly (R=0.50; P<0.001) and patients with GHD (R=0.39; P=0.08), a negative correlation was found in the NGRD group (R=-0.23; P<0.001). In the NGRD group, the results of multivariable analysis showed that GH levels were predominantly influenced by gender and body mass index (BMI), whereas IGF-I levels were modulated by albumin in addition to age and GH. Of note, in the NGRD group, there was an enhanced negative correlation between GH and IGF-I under conditions of BMI < 22 and albumin < 4.0 g/dL (R=-0.45; P<0.001), and the negative correlation

between GH and IGF-I was reinforced by excluding patients with other pituitary diseases and patients taking oral steroids (R=-0.51; P<0.001 and R=-0.59; P<0.001, respectively). Collectively, the results indicate that attention should be given to the presence of a negative correlation between serum levels of GH and IGF-I, especially in lean and low-nutritious conditions.