Correlation between Insulin-like Growth Factor-I and Obesity Index during Inpatient Treatment in Anorexia Nervosa in Childhood and Adolescence

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Abstract. We studied whether insulin-like growth factor-I (IGF-I) is attributable to nutrition during inpatient treatment in anorexia nervosa (AN) in childhood and adolescence. Nineteen Japanese females with AN, aged 12–19, were enrolled in this study. They were admitted to our hospital during 1993–2003 and treated by the “Keio Method”. They had complete bed rest during the first 2 mo of treatment. We studied a possible correlation between serum IGF-I level and obesity index (OI) by using the Spearman rank correlation test. The serum IGF-I level (SDS) and OI (%) was significantly positively correlated on admission (p=.009), at 1 mo (p=.0227), and 2 mo (p=.0063) after admission. These results indicate that the serum IGF-I level is determined by nutritional status in AN in childhood and adolescence under complete bed rest.

Key words: anorexia nervosa, insulin-like growth factor-I, obesity index, complete bed rest

Introduction

It is said that serum insulin-like growth factor-I (IGF-I) level is a sensitive and reliable biochemical marker of malnutrition and nutritional repletion in adult patients with eating disorders (1), but there are few published reports about the relation between IGF-I and nutritional status in anorexia nervosa (AN) in childhood and adolescence.

To determine whether IGF-I is attributable to nutrition during inpatient treatment in AN in childhood and adolescence, we analyzed the serum IGF-I level and obesity index.

Subjects and Methods

The subjects were 19 Japanese females with AN, aged 12–19 (median 14). They were treated by the “Keio Method” (comprehensive multi-modal program focused on retrieval of healthy adolescent growth and development), and were hospitalized with complete bed rest during the first 2 mo of treatment (2).

We used the obesity index (OI) (%) as a nutritional marker. The serum IGF-I levels were all converted to SD scores (SDS) according to subject’s ages (3).

We studied a possible correlation between serum IGF-I level (SDS) and OI (%) by using the Spearman rank correlation test.
Results

The ranges of OI and serum IGF-I levels on admission were from –48.9 to –22.8 (median –34.7) (%) and from –3.14 to 1.64 (median –2.43) (SDS), respectively (Table 1).

The serum IGF-I level (SDS) and OI (%) were significantly positively correlated on admission (p=.009), at 1 mo (p=.0227) and at 2 mo (p=.0063) after admission (Figs. 1–3).

Discussion

Our results indicate that the serum IGF-I level is determined by nutritional status in AN in childhood and adolescence as a significant correlation was observed between the serum IGF-I level and OI. Conversely, Inokuchi et al. reported that there was a lack of correlation between the serum IGF-I level and OI in AN in childhood and adolescence in their study (4). The discordance of
these results can be explained by different subjects. Our subjects’ condition was more severe than those of Inokuchi’s study, and needed complete bed rest during the first 2 mo of treatment.

Analysis of serum IGF-I level and calorie intake, which is currently conducted as part of the Keio Method of treatment, may be required to confirm that IGF-I is attributable to nutrition during inpatient treatment for AN in childhood and adolescence.

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References