Psychosocial Dwarfism: A Case Report

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Abstract. A 4.5-yr-old boy with Down syndrome showed stunted growth for 2 yr. The patient was endocrinologically evaluated as having complete growth hormone deficiency with low serum level of IGF-I, 8.2 ng/ml, and no response of growth hormone secretion to an arginine provocation test. He was diagnosed with psychosocial dwarfism induced by his mother. Without any specific treatment, separation of the patient from his mother normalized his growth and IGF-I, 51 ng/ml. Psychosocial dwarfism should be considered as a cause of growth retardation with pituitary malfunction.

Key words: deprivation syndrome, psychosocial dwarfism, IGF-I, Down syndrome, neglect

Introduction

Emotional deprivation is an important cause of growth retardation and endocrinologically mimics hypopituitarism (1, 2). The condition is known as psychosocial dwarfism. In this condition, growth retardation is attributed to a poor home environment and inadequate parenting and weight gain and growth dramatically improve on removal of the child from the dysfunctional home. The neuroendocrinologic mechanisms involved in psychosocial dwarfism remain to be elucidated. We report here a 4.5-yr-old boy with Down syndrome presenting with stunted growth caused by maternal deprivation syndrome. The hormonal conditions of the patient were described in this report.

Case Report

The patient was prenatally diagnosed with Down syndrome at 27 wk and uneventfully delivered after 37 wk of pregnancy. Because his mother refused to rear him, he grew up without his mother from the age of 2.5 mo. At the age of 2 yr, his mother started rearing him again. At that time, his height and weight were 83 cm and 9.5 kg, respectively. At the age of 4.5 yr, he was admitted to our hospital because of his failure to thrive. His height and weight were 83.8 cm (–4.71 SD) and 9.1 kg (–3.61 SD), respectively. The patient showed stunted growth for the preceding 2 yr (Fig. 1). On physical examination, the patient was nutritionally poor and his activity was decreased. However, he had no specific finding showing physical or neurological problems. In the laboratory data, IGF-I was specifically decreased, 8.2 ng/ml (normal: 29–73 ng/ml). The plasma growth hormone level was 0.33 ng/ml and was not stimulated by an arginine provocative test (GH peak: 1.17 ng/ml), suggesting the presence of...
complete growth hormone deficiency. Thyroid function was evaluated due to the condition of hypothyroidism in this patient (TSH, 0.69 µU/ml: normal 0.54–4.43 µU/ml, fT3, 1.5 pg/ml: normal 2.0–3.4 pg/ml; fT4, 0.7 ng/dl: normal 0.9–1.7 ng/dl). The patient’s bone age was estimated as 2.5 yr. In other laboratory data, alkaline phosphatase (ALP) was characteristically decreased, 187 U/L (Table 1).

A diagnosis of deprivation was made with the information his father gave and the patient was separated from his mother. Without any treatment, his growth and serum level of IGF-I improved 2 mo after the separation. His height and weight were 87.6 cm and 12.7 kg, respectively. The laboratory tests showed the following: IGF-I, 51 ng/ml; TSH, 3.42 µU/ml; fT3, 3.4 pg/ml; fT4, 1.2 ng/dl; ALP, 1106 U/L (Table 2). Although we did not perform a growth hormone provocation test after the separation, the normal level of IFG-I suggested the recovery of growth hormone secretion in this patient. The suppressed thyroid function of the

Fig. 1 Growth curve of the patient with maternal deprivation syndrome. The patient showed stunted growth for 2 yr.
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Discussion

A 4.5-yr-old boy of Down syndrome presenting with stunted growth, complicated by complete growth hormone deficiency, was clinically diagnosed with psychosocial dwarfism induced by his mother. After removal to a more favorable environment for 2 mo, recovery of his growth and growth hormone secretion were observed, confirming the reversibility of the growth hormone insufficiency and the diagnosis of psychosocial dwarfism. In psychosocial dwarfism, recovery of pituitary function is usually seen within 16 days of a change in environment (3). One report described that growth hormone insufficiency or panhypopituitarism was reversed in children with hyperphagic psychosocial dwarfism after their removal from their stressful home environment (4). However, such hyperphagic behavior was not observed in our case.

Short stature is one of the features of Down syndrome. Growth velocity in Down syndrome is reduced most between the ages of 6 mo and 3 yr, but subsequently is almost normal (5, 6). Consequently, the patient’s growth failure might here been considered natural; however, his height changed less than 1 cm in 2.5 yr, and severe stunted growth is a typical failure of psychosocial dwarfism.

Some children with Down syndrome have growth retardation secondary to GH deficiency (7). Although we did not repeat the GH provocation test, the patient’s dramatic height improvement was different from patients with permanent GH deficiency.

Thyroid disorders are another common feature of children with Down syndrome. As the patient’s secondary hypothyroidism also improved...
after separation from his mother, we consider that malnutrition and hypopituitarism due to deprivation had the most causative effect on his thyroid function. The patient needs careful follow up about his growth because of his environment and primary disease.

In conclusion, psychosocial dwarfism should be considered as a cause of growth retardation associated with pituitary malfunction.

References