Brief Communication

Too short and too poor: A tale of two siblings

Laxminarasimhan Balaji, Chandrasekaran Venkatesh, Nanda Chhavi, Dhandapani Gunasekaran, Palanisamy Soundararajan

Department of Pediatrics, MGMC and RI, Pillaiyarkuppam, Puducherry, India

ABSTRACT

Two short siblings who were brought for evaluation of short stature are described with emphasis on availability of resources in the diagnosis and management of the cause of short stature in them.

Key words: Growth hormone resistance, mecasermin, short stature, siblings

Introduction

Chronic diseases cause huge economic burden to both patients as well as the society at large in terms of costs involved in investigations and treatment over a longer period of time and also loss of national productivity due to sick absenteeism. They also cause emotional distress and domestic turmoil. Chronic childhood diseases are no exception to it. The decision to treat such patients on a long-term basis is often made depending on economics rather than individual choices especially in resource limited settings. We describe two siblings with short stature whose management were complicated by lack of resources.

Brief Report

An 18-month-old male infant was brought with complaints of not gaining height since birth. He was found to be small at birth with uneventful antenatal and natal periods and was delivered at term. His birth weight was normal. Subsequently, around 1 year of age his mother noticed that he was short compared to his peers in the neighborhood.

Access this article online	
Quick Response Code:	Website: www.ijem.in
	DOI: 10.4103/2230-8210.100633

His elder sibling is a 20-year-old girl with height age that corresponds to 5 years (107 cms). The parents had not taken any steps to investigate or treat her elder child because of ignorance and poverty. The girl's intelligence is reportedly normal and has been educated upto higher secondary grade. There is no family history of constitutional delay in growth or puberty. The father's height was 153.5 cm and mother's height was 148.5 cm and mid-parental height of 157.5 cm.

On examination, the boy weighed 7 kg [less than 3rd centile of world health organization (WHO) weight for age chart], appeared short with height of 63 cm (less than 3rd centile of WHO height for age chart) with advanced upper segment (US)/lower segment (LS) ratio for age. His mid arm circumference was 13 cm. He showed features of poor mid-facial growth, and prominent head with rounded occiput and small mandible. His hair was sparse brown and silky. He was alert and interacted well with us on examination. There were no teeth abnormalities or stigmata of chronic disease. His elder sibling too shared the above clinical features. He had been earlier hospitalized and investigated for his short stature with funds pooled in from residents and faculty members and the investigations revealed normal bone age, normal thyroid status and an elevated basal growth hormone (GH) levels (49 ng/dl), decreased IGF-I level of less than 25 (55-327) mg/ml and decreased IGF 1-BP3 level of less than 0.5 (0.7-3.6) u/g ml. Considering the family history of short stature, the typical facial appearance and elevated basal GH levels and reduced IGF-1 level, a provisional diagnosis of GH insensitivity was made. A GH stimulation test and IGF-1

Corresponding Author: Dr. C. Venkatesh, Department of Pediatrics, Mahatma Gandhi Medical College and Research Institute, Pillaiyarkuppam, Puducherry – 607 402, India. E-mail: cvenkatesh@hotmail.com

generation test were planned but could not be done as the parents declined it due to economic reasons. Considering the financial background of the child, we were unable to provide any pharmacological support. We had planned to improve the child's nutrition intake and would like to refer him to a place where treatment could be made available free of cost.

Discussion

The child described in our case report was diagnosed to have Laron syndrome based on typical facial features, growth deficiency with increased basal GH levels and decreased IGF-1 and IGF1-BP3 levels with history of similar features in the child's elder sibling. The clinical features in our case is consistent with the description of Laron`s series of 60 Israeli patients with the syndrome named after him.[1] However, in his series, other abnormalities in the form of hypoglycemia, under developed external genitalia, delayed or defective dentition are also described. In our case even though the weight was less than third centile, he did not appear wasted and had relatively preserved subcutaneous fat. That could also explain finding a normal mid-arm circumference in the child. Children with this syndrome appear to be obese in spite of having lower weight for age. We were not able to document hypoglycemia in our child probably because the child was fed on the breast frequently. Laron syndrome is also designated as GH insensitivity syndrome as primarily there is resistance to the action of GH.[2] Recombinant IGF-1 (Mecasermin) is commercially available for treatment of GH insensitivity and disorders of GH-IGF-1 axis for more than 20 years.[3] However, its long-term safety and efficacy is yet to be proved.[4] Treatment of GH insensitivity involves twice daily subcutaneous injection of mecasermin which might cost more than 15 lakh rupees per year of treatment for a child weighing 20 kg.[5]

The diagnosis and treatment of diseases involving GH-IGF-1 axis itself is quite expensive and particularly out of reach for most economically down trodden population for whom expenditure for a life-saving treatment would be more appropriate rather than spending a considerable amount of their savings on diagnosing and if at all treating a condition that does not affect longevity.[6] In the United States, the estimated cost of treating slow growing children between the ages of 4 and 15 years were found to be ranging from 196 million to 18 billion USD depending on whether or not GH therapy is prescribed for one or more of the following three conditions namely GH Deficiency, Turner's syndrome and chronic renal insufficiency.[7] So can we expect to use few lakhs of government money to help these children grow a few inches? Does the above treatment produce a definite improvement in the quality of life in these children? Will the insurance companies in India be able to take care of the costs involved? Even in the west, only about 50% of the patients who have been prescribed GH therapy are actually covered by the insurance companies.[7]

Conclusions

Considering all the above facts it seems counter-productive to spend on investigations when one will not be able to treat. Hopefully, the Pediatric Endocrinology Society of India, the Indian Journal of Endocrinology and Metabolism or the Endocrine Society of India can provide us some guidelines that might help us to choose our resources wisely and economically. Support groups with grants in aid from corporate houses can also be set up to help these children to grow. All said and done in a country where several thousand children are still malnourished and die of its consequences, one might really think whether it is cost-effective to spend several millions just to help a few hundreds to achieve few centimeters of height.

References

1. Laron Z. Laron syndrome (primary growth hormone resistance or insensitivity): The personal experience 1958-2003. J Clin Endocrinol Metab 2004;89:1031-44.
2. Laron Z, Blum W, Chatelain P, Ranke M, Rosenfeld R, Savage M, *et al.* Classification of growth hormone insensitivity syndrome. J Pediatr 1993;122:241.
3. Rosenbloom AL. Mecasermin (recombinant human insulin like growth factor. Adv Ther 2009;26:40-54.
4. Kemp SF, Fowlkes JL, Thrailkill KM. Efficacy and safety of mecasermin rinfabate. Expert Opin Biol Ther 2006;6:533-8.
5. Ranke MB, Wolfle J, Schnabel D, Bettendorf M. Treatment of dwarfism with recombinant insulin like growth factor-1. Dtsch Arztebl Int 2009;106:703-9.
6. Laron Z. The GH-IGF-1 axis and longevity. The paradigm of IGF-1 deficiency. Hormones (Athens) 2008;7:24-7.
7. Finkelstein BS, Silvers JB, Marrero U, Neuhauser D, Cuttler L. Insurance coverage, physician recommendations, and access to emerging treatments: Growth hormone therapy for childhood short stature. JAMA 1998;279:663-8.

Cite this article as: Balaji L, Venkatesh C, Chhavi N, Gunasekaran D, Soundararajan P. Too short and too poor: A tale of two siblings. Indian J Endocr Metab 2012;16:815-6.
Source of Support: Nil, **Conflict of Interest:** None declared.