The prevalence and etiological profile of short stature in children

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ABSTRACT

Background
According to the survey, 97% of parents of young adolescents do not know that their shortness is caused by certain diseases and mistakenly believe that it is a delay in the development of the child or hereditary factors: only 1.6% of parents know that there is a possibility of disease; 41.9% of parents have medical knowledge; 32.3% do not believe that short stature is a disease and will grow taller in the future; 29% know short stature can be cured
Purpose
This study aims to assess the prevalence of short stature in Iraqi children
Material and method
Fifty children were collected from children's General Hospital, Kirkuk, Iraq, where a cross-sectional study was conducted in Kirkuk governorate on children of short stature. Where this study was investigated by conducting a cross-sectional study in the governorate of Kirkuk, and data were collected, characteristics that show the accuracy and frequency of spread to children of short stature, which consist of gender, age, and height
Results and conclusion
The results of the study indicate that familiar short stature AND Hypothyroidism formed the high percentages in the causes of short stature in children, where the lack or insufficient secretion of growth hormone leads to the inability to grow normally (that is, dwarfism, which is usually referred to as stunting)

Keywords:

Introduction

Short stature in children is an urgent problem, while pediatricians underestimate the information content of routine anthropometric indicators, as a result of which a number of endocrine and non-endocrine diseases

accompanied by developmental delay are diagnosed. The article presents a diagnostic algorithm that allows the pediatrician to diagnose short stature in children and adolescents, perform differential diagnosis and determine patient management methods.

Short stature is defined as height that is two or more standard deviations from the mean age and sex of the population (<2.5 percent) [1,2].

Growth retardation is defined as a growth rate below the 5th percentile for age and sex or a reduction in growth at two or more percentiles on the growth chart

About 2% of all children] are of short stature.

However, one study found that 38% of boys and 20% of girls who sought help were of normal height, and visits to the doctor were associated with measurement errors, errors in growth charts, or a failure to consider a child's genetic development potential. [3,4]

In a school study, 14% of children under the third centile who grew less than 5 cm/year had an underlying disease, 5% of whom were endocrine. [5,6] In under-resourced settings, short stature is often a consequence of malnutrition. Prevalence of stunting among adolescents and children ranges from 9% to 11% and reaches 30% in other countries [7,8,9,10]

The factors that determine normal growth depend on the age of the child. Changing any of the factors can lead to stunted growth. [11,12]

Prenatal growth: The main factors for fetal growth are uterine size, placental function, maternal nutrition, insulin, insulin-like growth factors (IGFs), and IGFBPs-related proteins [13,14,15].

Postnatal growth: It is characterized by a rapid initial growth rate that gradually decreases, reaching a peak of about 5-7 cm/year between 3 years and puberty.

Material and method

Patient sample

Fifty children were collected from children's General Hospital, Kirkuk, Iraq, where a cross-sectional study was conducted in Kirkuk governorate on children of short stature.

Study design

A cross-sectional study was conducted in Kirkuk Governorate in order to know the prevalence and etiological profile of short stature in children. Demographic information and data on patients of short stature (gender, height, age, cardias disorder, and hypothyroidisim) were withdrawn.

Where all the children in this study underwent height tests by relying on the distance scale approved by the Iraqi Ministry of Health, and all data were analyzed based on the statistical analysis program SPSS soft in addition to the MS Excel program

Short stature in children is an urgent issue today; at the same time, pediatricians underestimate the informational content of routine anthropometric indicators leading to a series of late-diagnosed endocrine diseases and not endocrine diseases associated with developmental retardation. The article presents a diagnostic algorithm, which allows the pediatrician to diagnose short stature in children and adolescents, carry out differential diagnosis and determine further tactics for managing patients with developmental delays

Growth hormone deficiency cannot be diagnosed with a single blood test. Because growth hormone secretion increases only during limited periods of time, such as nighttime sleep, morning blood collection is usually of low value. To do this, to check for growth hormone deficiency, it is necessary to perform a "stress test" in which blood is drawn every 30 minutes after the injection or take a drug that increases growth hormone in the blood.

If the growth hormone does not exceed a certain concentration by this test, growth hormone deficiency is diagnosed, and growth hormone therapy can be started.

In addition, growth hormone has an effect on the production of the hormone IGF-1 in the liver, which can also grow bone. Only through a blood test can you know whether this hormone is produced in the body, which can be a criterion for judging whether the secretion of growth hormone is sufficient.

Study period

The duration of the study was from 20-5-2019 to 29-6-2020, despite the long period, but it

included all the details of the clinical evaluation.

Aim of study

The aim of the research is to assess the prevalence and etiological profile of short state in children Iraqi.

Results

Table 1- distribution of patient according to age

AGE					
		f	%	VP	CP
Valid	6.00	5	10.0	10.0	10.0
	7.00	5	10.0	10.0	20.0
	8.00	5	10.0	10.0	30.0
	9.00	5	10.0	10.0	40.0
	10.00	5	10.0	10.0	50.0
	11.00	5	10.0	10.0	60.0
	12.00	5	10.0	10.0	70.0
	13.00	5	10.0	10.0	80.0
	14.00	5	10.0	10.0	90.0
	15.00	5	10.0	10.0	100.0
	Total	50	100.0	100.0	

Figure 1- frequency of patient according to gender

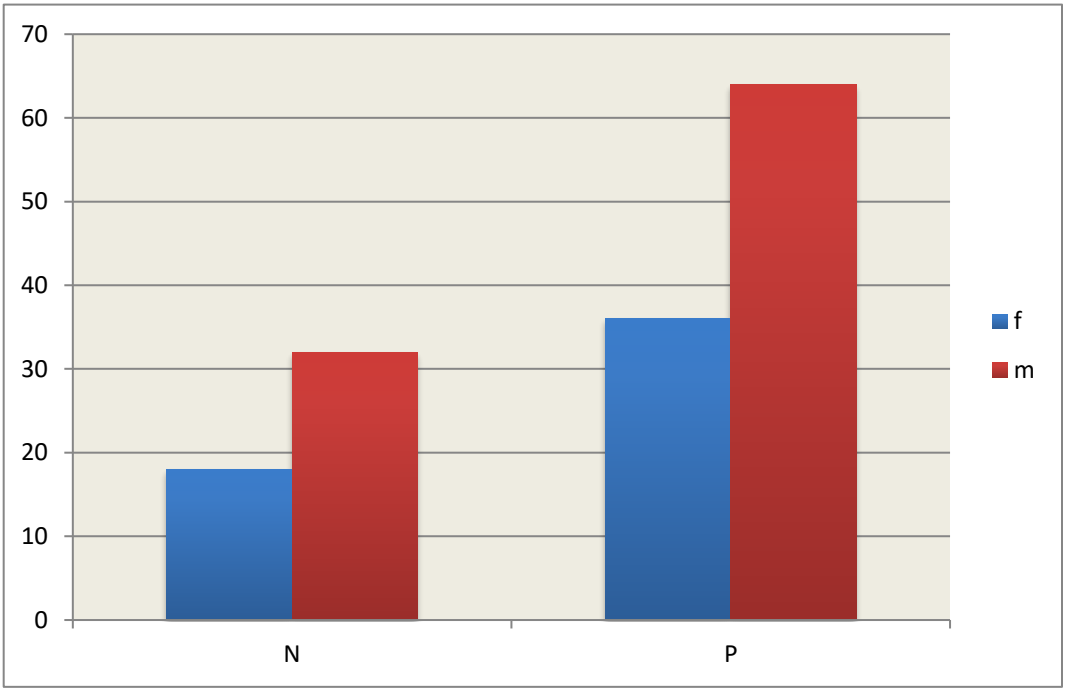

Figure 3- causes short stature

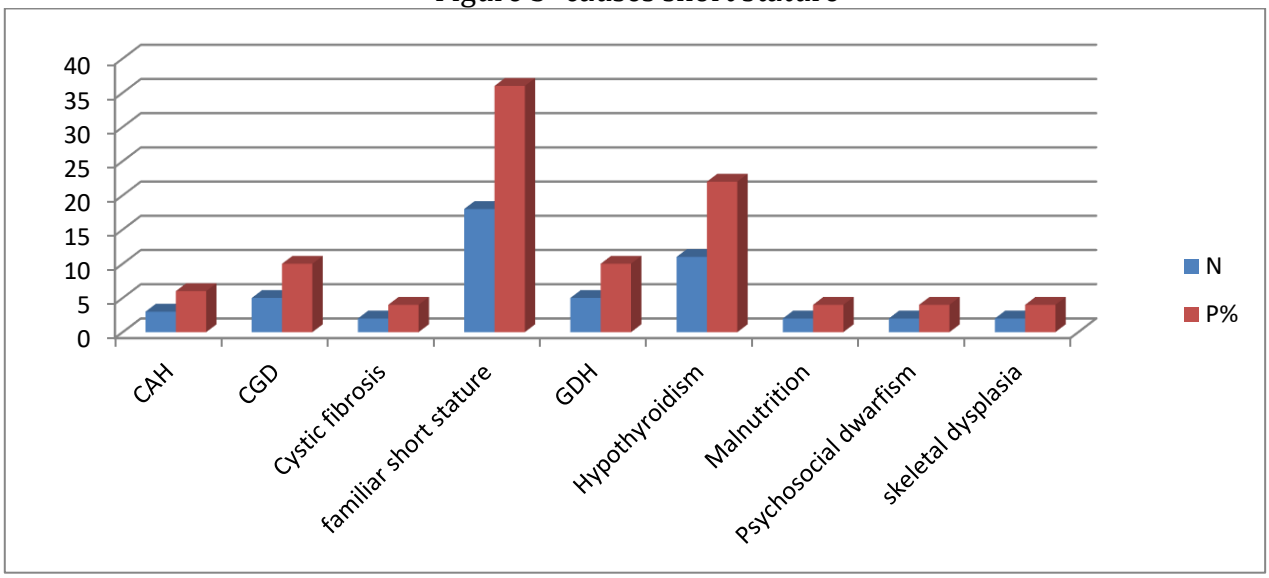

figure 4- MH of causes

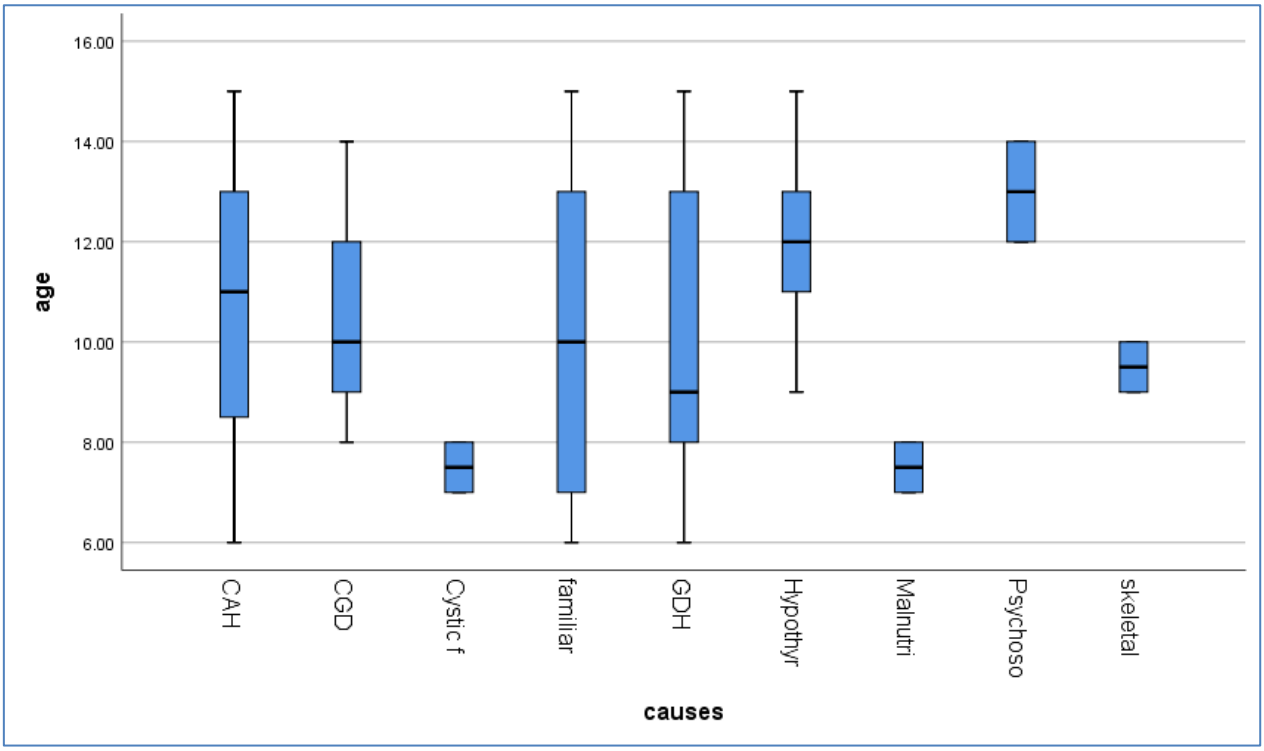

Table 2- frequency of causes according to gender

causes * gender Crosstabulation			
Count			
	gender		Total
	f	m	

causes	CAH	2	1	3
	CGD	1	4	5
	Cystic fibrosis	2	0	2
	familiar short stature	5	13	18
	GDH	2	3	5
	Hypothyroidism	4	7	11
	Malnutrition	2	0	2
	Psychosocial dwarfism	0	2	2
	skeletal dysplasia	0	2	2
Total		18	32	50

Discussion

Fifty children were collected from Pediatric General Hospital, Kirkuk, Iraq, and the number of patients was distributed by gender to 32 male patients and 18 female children, as shown in Figure 1.

By relying on statistical analysis in calculating the ages of patients in addition to the distribution and prevalence, the mean ±SD to the patients' ages was found as shown in Table 3.

Table 3- mean SD (age of patient)

Statistics		
age		
N	Valid	50
	Missing	0
Mean		10.5000
Median		10.5000
Std. Deviation		2.90144
Range		9.00
Minimum		6.00
Maximum		15.00
Percentiles	25	8.0000
	50	10.5000
	75	13.0000

The causes of short stature are complex. The most common causes include familiar short stature in 18 patients and hypothyroidism in 11 patients.

Height is one of the genetic traits of a human being. Studies have shown that at least 180 localized gene variants influence height [12]. In this study, genetic diseases were the third major cause of short stature, which was different from the results of other local studies [9-11]. On the one hand, due to the phenotypic similarity and heterogeneity between the different genetic diseases that lead to short stature, patients may have manifestations typical of the corresponding genetic diseases, or they may have no other special manifestations except for short stature. Identify. On the other hand, due to the high price of genetic tests, they have not been widely used in China, so it is easy to miss or misdiagnose some genetic diseases as ISS. The strength of this study lies in identifying some of the rare genetic diseases that cause short

stature through karyotyping and genetic testing.

Knowing that a child has short stature is not an easy task. Some children come to the hospital when they find they are taller than their younger siblings. Some parents also did not notice that there are shorter children in the same school and grade. Also, since the parents are low in height, they lag behind the low height of their children.

The best way to tell if your child is short is to use a growth chart. This chart is also found in the Mother and Child Handbook and can also be obtained at schools, clinics, or in a hospital's pediatric department. It is possible to know the exact shortness and the time of the onset of low height, and for this reason, you should pay attention to the height of the child during each physical examination and to fill in the growth curve diagram.

Conclusion

The results of the study indicate that FSS AND Hypothyroidism formed the high percentages in the causes of short stature in children

There are many causes of dwarfism, but most of them result from a defect in the genes responsible for height and body symmetry, most notably achondroplasia, a genetic disease that impedes the growth of limb bones, leading to short arms and thighs. In addition, dwarfism may be caused by a lack of growth hormone. Usually, It is caused by the transmission of a genetic mutation from the father or the mother

Recommendation

The main points of prevention and treatment of short stature are as follows:

1. Effective dynamic observation of children should be carried out, and the height during growth and development should be timely recorded and analyzed.
2. It is necessary to strengthen and improve the nutritional status of children so that their growth and development are on a good nutritional basis.
3. Actively prevent and treat chronic diseases. Effective treatment of a variety of chronic diseases can prevent and reduce the incidence of short stature.
4. Make the children have a good psychological, social, and emotional atmosphere.
5. Correct endocrine hormone abnormalities. Lack of growth hormone and thyroid hormones are common causes of short stature.

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