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AN ETIOLOGICAL PROFILE OF SHORT STATURE AMONGST CHILDREN.

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ABSTRACT **BACKGROUND :** Short stature is a common problem in children. Short stature occurred due to many causes , these causes may be genetic, environmental or chronic diseases. Diagnosis of short stature could be achieved by two combined ways, physical examination, and laboratory tests. Treatment of short stature depends on the right diagnosis and causative agent.

OBJECTIVES : To find the proportion of etiology of short stature amongst the study population. To identify etiology of short stature and create awareness about treatment of identified causes amongst parents.

MATERIALS AND METHODS : All children below 14 years of age were included in this prospective clinical study conducted at tertiary hospital between January 2019 to August 2019. All children who were admitted and also on OPD basis were plotted on revised IAP growth chart. Those with height of below 3rd centile were investigated for etiological causes by history, physical examination, bone age analysis and other required investigations after taking prior consent.

RESULT : Out of 77 enrolled patients there were 47% boys and 53% girls with mean age of 6 years. As per classification of etiological causes 52% had physiological causes and 48% had pathological causes. In those pathological causes 51% had chronic illness, 8% had endocrine, 14% syndromic, 14% nutritional deficiency and 13% were miscellaneous/ idiopathic.

CONCLUSION : There are multiple government schemes for weight improvement but none for height. This shows that this issue has been neglected by health officials as well as community medicine. Physiological short stature constitutes the most number of patients; hence they require only reassurance and counselling. Out of pathological etiology, the bulk is of chronic illness with undernutrition contributing the most; such patients improve with effective and prompt treatment. Etiologies that require prolonged and costly treatment such as growth hormone deficiency are rare.

KEYWORDS : growth chart, short stature

INTRODUCTION

Growth results from interaction of genetics, health and nutrition. It is an interplay of many bio-physiological and psycho-social factors which can adversely affect the growth. Hence, growth assessment is an essential tool in child care. Any deviation in normal growth pattern leads to various growth disorders and can be the first sign of underlying problem. Linear growth retardation is one of them which can be detected as short stature. Short stature may be the only or the main presenting symptom in many cases. Various studies have been conducted to know the growth pattern and evaluate the causes of short stature (1).

Short stature is defined as height below 3rd percentile or less than 2 standard deviations (SDs) below the median height for that age and sex according to the population standard. Around 2.5-3% of the children worldwide are short. Short stature can be readily recognized with the help of growth charts. Growth chart analysis can be improved by calculating the growth velocity and mid parental height. The evaluation of short stature starts by identifying normal variants from abnormal or pathological. Further evaluation of pathological short stature is done as per various etiologies.

Familial short stature and Constitutional Growth delay are considered as normal variants. While the pathological short stature includes a wide variety of underlying disorders. Children with constitutional growth delay have a delayed puberty due to decrease in the growth velocity. Bone age in these patients corresponds with the height age and they achieve a normal adult height later (2).

In Familial short stature growth proceeds along a curve below but parallel to fiftieth percentile and is characterized by low mid parental height but normal bone age and growth velocity. Clinical features of pathological short stature depend on the underlying disorder. Depending on the upper-lower segment ratio pathological short stature can be further divided into proportionate and dis-proportionate short stature. Chronic systemic disorders, malnutrition, chromosomal or endocrinal disorders lead to a proportionate short stature. While most of the dis-proportionate short stature are secondary to skeletal dysplasia or resistant rickets. In developing countries malnutrition and chronic systemic disorders are still the leading causes of short stature. Due to increasing awareness and accessibility to different investigations like hormonal assays, Karyotyping the incidence of short stature secondary to genetic and endocrine disorders is increasing.

Short stature is a common paediatric problem that requires the paediatrician to decide whether it represents only a normal variation or indicates an underlying disease. An understanding of short stature not only permits early detection months to years before other clinical symptoms appear but may also help in modifying the course of the underlying cause by means of early intervention (3).

MATERIALS AND METHODS

All children below 14 years of age were included in this prospective clinical study conducted at tertiary hospital between January 2019 to August 2019. All children who were admitted and also on OPD basis were plotted on revised IAP growth chart. Those with height of below 3rd centile were investigated for etiological causes by history, physical examination, bone age analysis and other required investigations after taking prior consent. All treatable causes were treated by guidance from expert clinicians. Endocrinologist's help was taken in required cases.

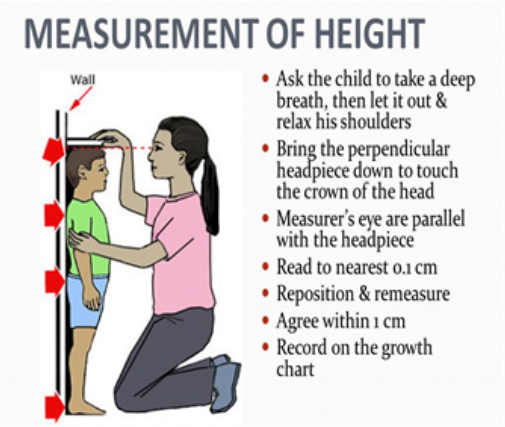


Fig.1 Measurement of height

RESULT

Out of 77 patients who were found to have short stature including 36 boys (47%) and 41 girls (53%). With mean age being 6 years with the following age distribution.

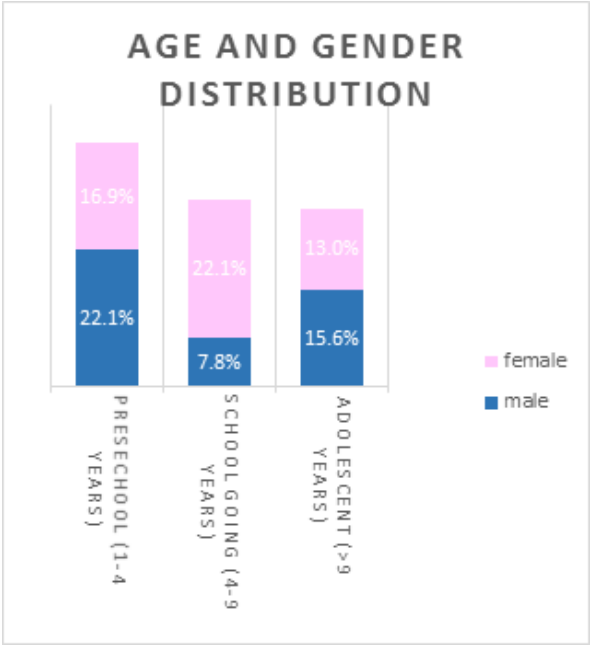


Fig.2 age and gender distribution

As per classification of etiological causes 52% had physiological causes and 48% had pathological causes. In those pathological causes 51% had chronic illness, 8% had endocrine, 14% syndromic, 14% nutritional deficiency and 13% were miscellaneous/ idiopathic.

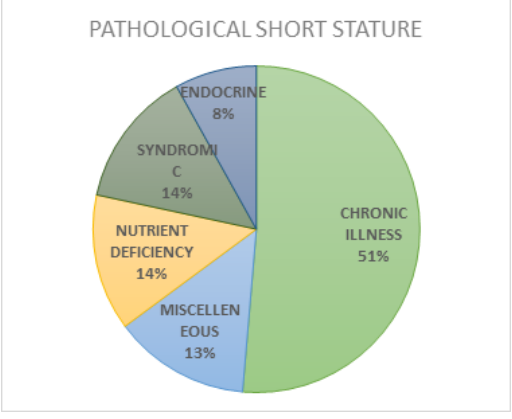
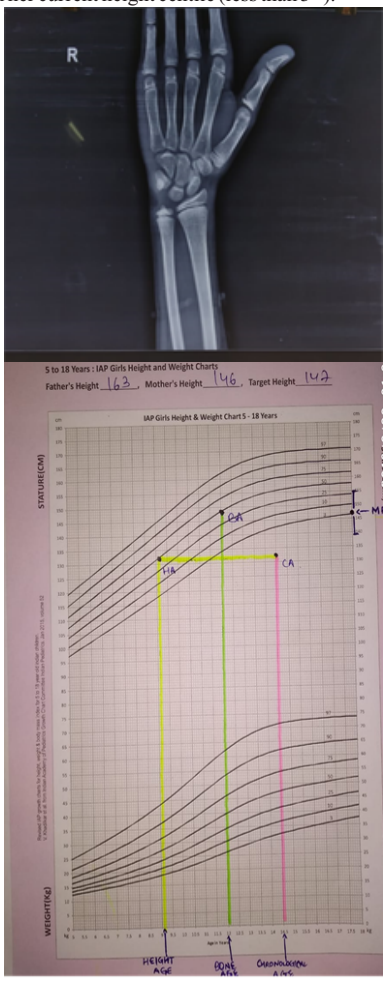


Fig.3 Pathological short stature

DISCUSSION

In this study 52% cases were grouped as normal variants. Amongst the pathological variety , majority group (51%) was chronic systemic diseases. In this study malnutrition (26%) was found commonest cause for chronic pathological short stature. Where females were predominantly affected in all groups (1:1.1) . An early diagnosis of these disorders with appropriate treatment would likely reduce the burden of short stature (4).

While conducting study we came across one case and would like to discuss here as to make you understand the relevance of the study. A 14 year old presenting to dermatology OPD for patchy loss of hair was referred to pediatric OPD for workup of her short stature. Height age was 9 years on her growth chart and bone age was 12 years according to her wrist X-ray hence, on taking full anthropometry, patient appeared to be one of constitutional short stature. However her mid parental height was 147 cm (between 3rd and 10th centile) which was not consistent with her current height centile (less than 3rd).



Also, patient had no adrenarche , pubarche or menarche. SMR stage 0 Hence, hormone study was done which showed normal thyroid profile and low insulin like growth factor with borderline low growth hormone along with normal cortisol, estrogen and testosterone level which validated isolated deficiency of growth hormone (5). Patient was started on subcutaneous growth hormone analogue as advised by endocrinologist and is on regular follow up. Out of 77, only one such patient was found. But, her sexual development may improve and she may attain fertility after the treatment. Whether there is improvement in height will be observed on follow up. The relevance of the study is not to make all patients gain height but to identify markers that improve state of health of the individual.

CONCLUSION

There are multiple government schemes for weight improvement but none for height. This shows that this issue has been neglected by health officials as well as community medicine. Physiological short stature constitutes the most number of patients; hence they require only reassurance and counselling. Out of pathological etiology, the bulk is

of chronic illness with undernutrition contributing the most; such patients improve with effective and prompt treatment. Etiologies that require prolonged and costly treatment such as growth hormone deficiency are rare.

REFERENCES

1. Reddy VS, Jahagirdar R, Deshpande R. Growth parameters of under 2 -year-old Indian children: A comparison to WHO MGRS 2006 charts. Indian J Endocr Metab 2020;24:176-80
2. WHO Multicentre Growth Reference Study Group. WHO Child Growth Standards based on length/height, weight and age. Acta Paediatr Suppl 2006;450:76-85.
3. Oostdijk W, Grote FK, de Muinck Keizer-Schrama SM, Wit JM. Diagnostic approach in children with short stature. Horm Res (2009) 72:206–17.10.1159/000236082
4. J. Lantos, M. Siegler, and L. Cuttler, "Ethical issues in growth hormone therapy," Journal of the American Medical Association, vol. 261, no. 7, pp. 1020–1024, 1989.
5. Agarwal KN, Saxena A, Bansal AK, Agarwal DK. Physical growth assessment in adolescence. Indian Pediatr. 2001;38:1217–35.