SHORT STATURE

Pages with reference to book, From 217 To 219

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The purpose of this communication is to draw the attention of the family physicians, school health officers and paediatricians towards the problem of short stature in children. Parents are concerned that "the child is not growing as he should compared to other children of his age". They are often told not to worry as the child otherwise appeared to be normal. On the other hand be may be subjected to extensive laboratory investigations with great expense and anxiety to the parents. We feel that there should be a rational approach to this problem.

Growth

For a child to grow in a normal fashion he needs to receive adequate nutrition, live in an emotionally supportive environment and be free from chronic disease. Changes in any or all of these can affect growth adversely. Unfortunately many children do not present until mid-childhood. Part of the reason lies in the difficulty experienced by primary health care workers, family physicians and school health officers in measuring children. Measurement is the basis of growth assessment. Sadly, measurement of height has not gained general acceptance in this country and instead great reliance has been placed on weight which is variable. Family physicians often complain that in a busy clinical practice it is time consuming to measure height accurately.But similar difficulties are encountered in measuring blood pressure which requires equal precision and takes longer.

Height Measurement

Height should be measured by one person with attention to detail. The aim is to record the distance between flat surfaces applied to the top of the head and the soles of the feet. A standard position of the head should be used. The outer canthus of the eye should be in the same horizontal plane as the external auditory meatus and gentle traction is applied over the mastoids to eliminate postural changes. Children under 2 years of age should have supine length measured using an infant measuring table. For children over 2 years a wall mounted scale (now available in this country) should be used. Scales mounted in combination with weighing scales have no place in growth assessment. The measured height is entered on a centile chart (figure 1,2)

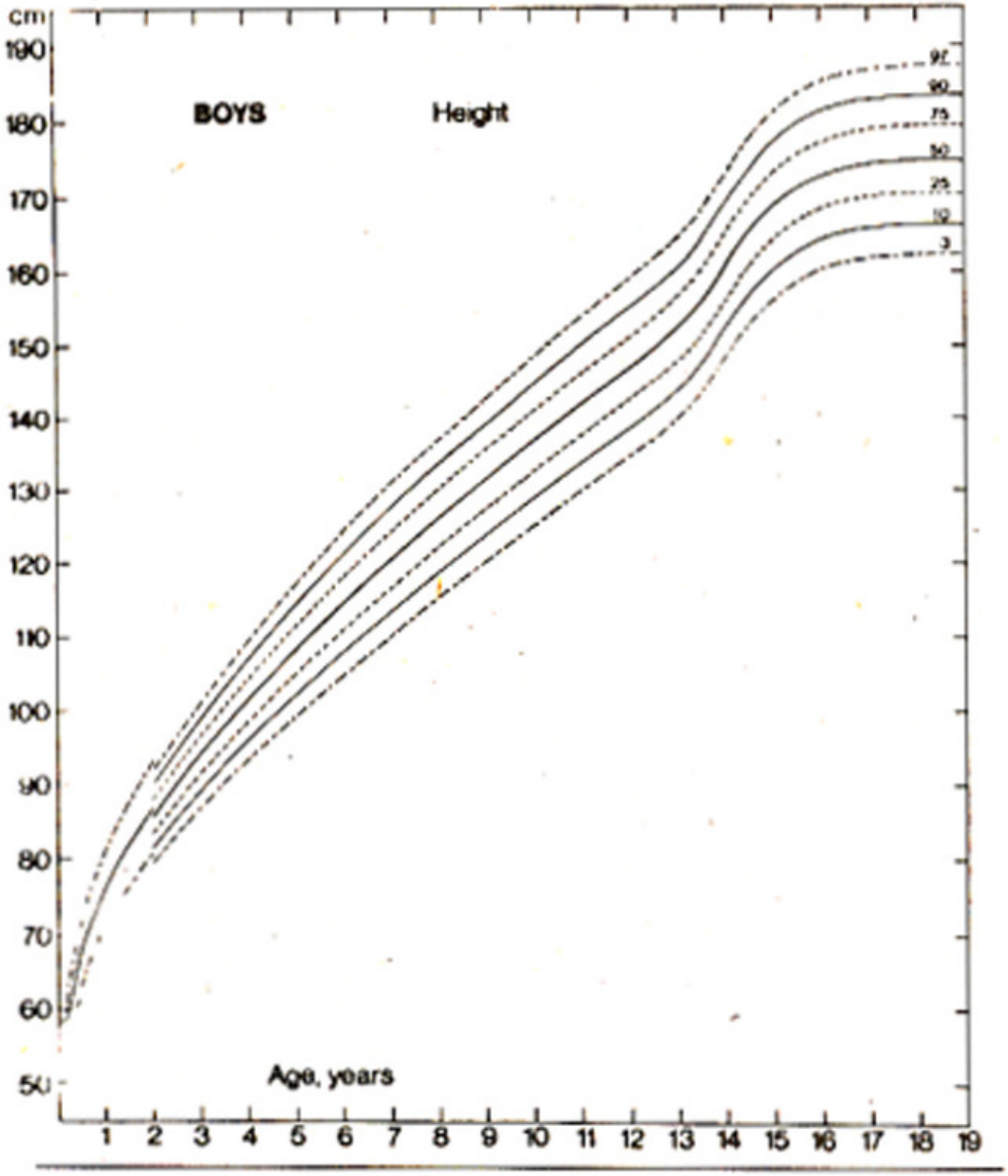


Figure 1. Height measuring chart for boys.

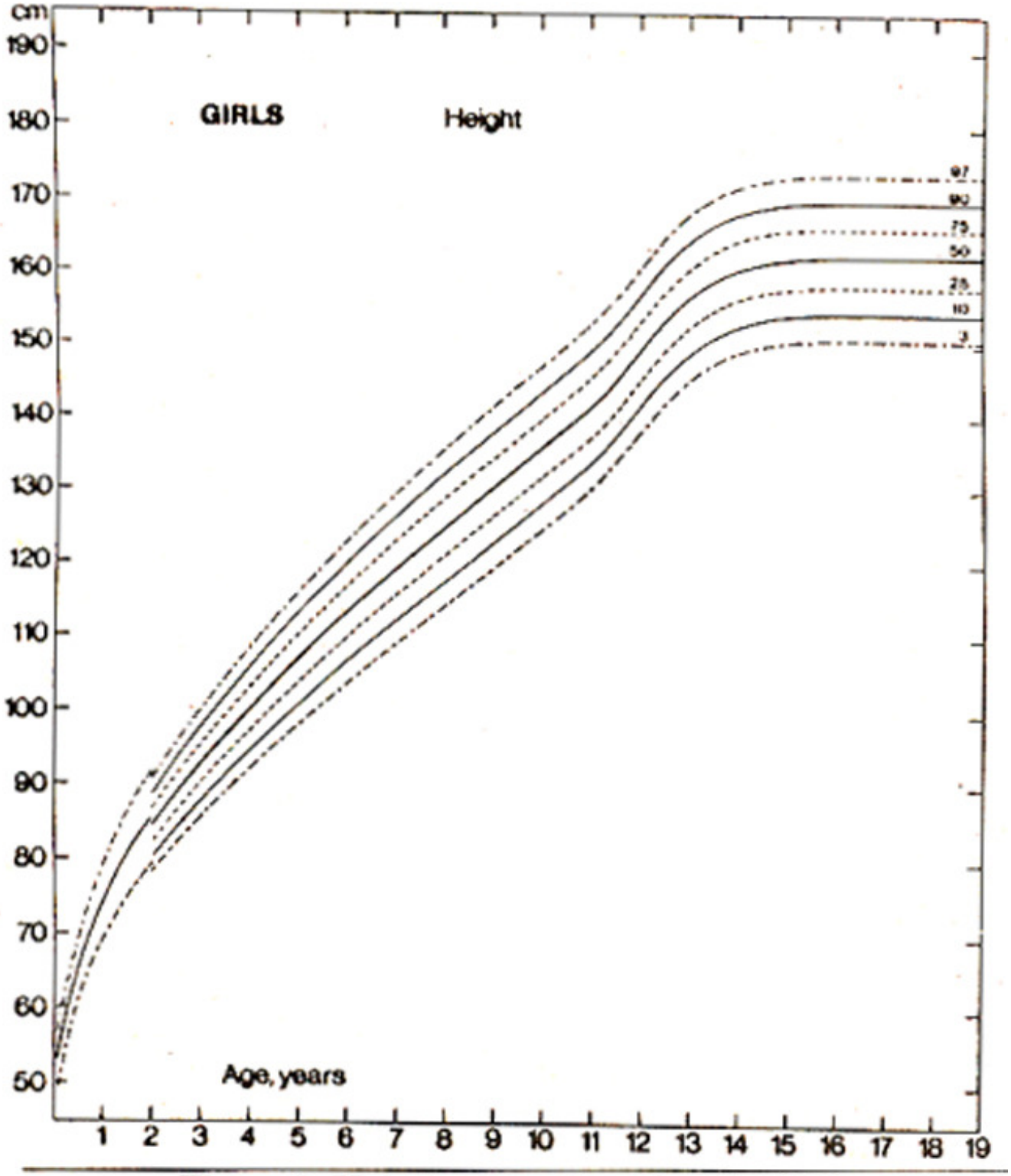


Figure 2. Height measuring chart for Girls.

for boys and girls in relation to chronological age. Having plotted this point (point A), for example, if it falls on third centile we are still unable to answer the question whether the boy's growth is normal. 1vo possibilities exist: either he has normal growth and he is one of the 3% or else this point is part of a continuum of poor growth. This situation can only be resolved by taking a second measurement of

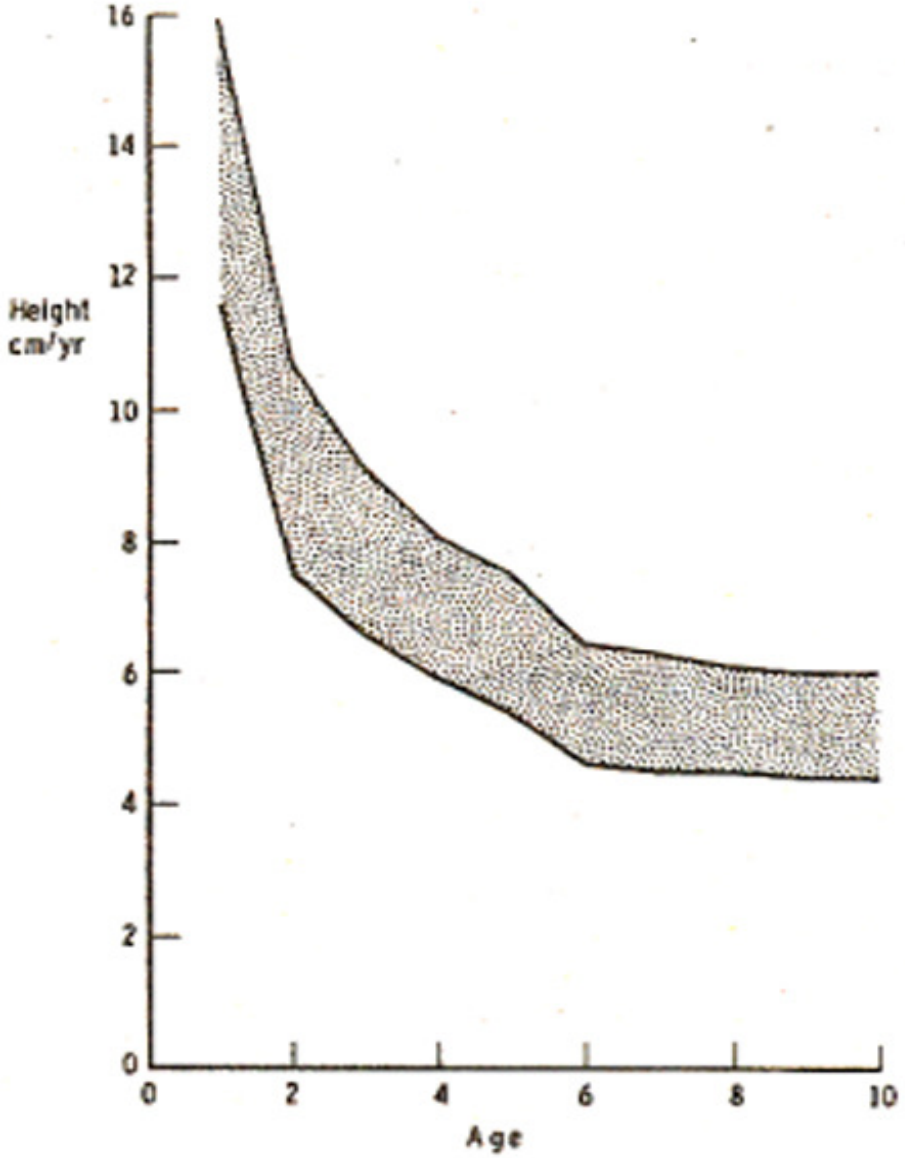
height. A period of time must elapse to allow a difference in height to have occurred which is greater than the error of the measurement of height on each of the two occasions. Under the circumstances it is advisable to have a second measurement of height after 6 months. A longer duration, say, 1 year or 2 years is feasible and is likely to give less error. Ideally velocity should be looked at over a whole year. Once the second measurement is obtained it is plotted on the same centile Chart (point B). Now the difference in height is divided by the time which has elapsed between the two measurements. The result is the growth velocity and is expressed in centimeters per year. To facilitate the calculation the decimal date system is used. This calculation is as follows:

Height velocity =

(Cm/Yr) HT(Point B)-HT(Point A)

Age (Point B)-Age(Point A)

The result in Cm/Yr is plotted on height velocity chart (figure 3)



How to use this chart.

1. Measure height on two occasions.
2. Plot the rate of growth (cm/year) against the age of the child midway between the two measurements.,
   e.g. Heights measured at ages 4 and 6 show a difference of 12cm. Rate is 6cm year which should be plotted at age 5.
3. Seek advice for rates falling outside the thatched area.

Figure 3. Height Velocity acceptable limit for boys and girls.

against the age of the child midway between the two measurements. If the growth velocity falls in the thatched area parents could be reassured that all was well and the child spared needless investigations, expense and potentially traumatic stay in the hospital. Any child falling outside the thatched area should be investigated whether he is tall or short. For the purpose of this communication we will not

discuss tall stature. Any child falling below the thatched area requires investigation for short stature and should be referred to a paediatrician. The majority of children thought to be short are in fact perfectly normal and comprise the 3% of children whose stature lies at or below the third centile. Usually these children are conspicuous for having short parents even though the possibility exists that one or both of them may be abnormal and that their abnormality may be a genetic one must not be forgotten. Assessment of growth velocity will distinguish short normal children from those who have something definitely wrong to make them pathologically short. Broadly speaking, children whose stature lies below the third centile appropriate for their parental heights can be divided into those who look normal and those who have distinguishing features.

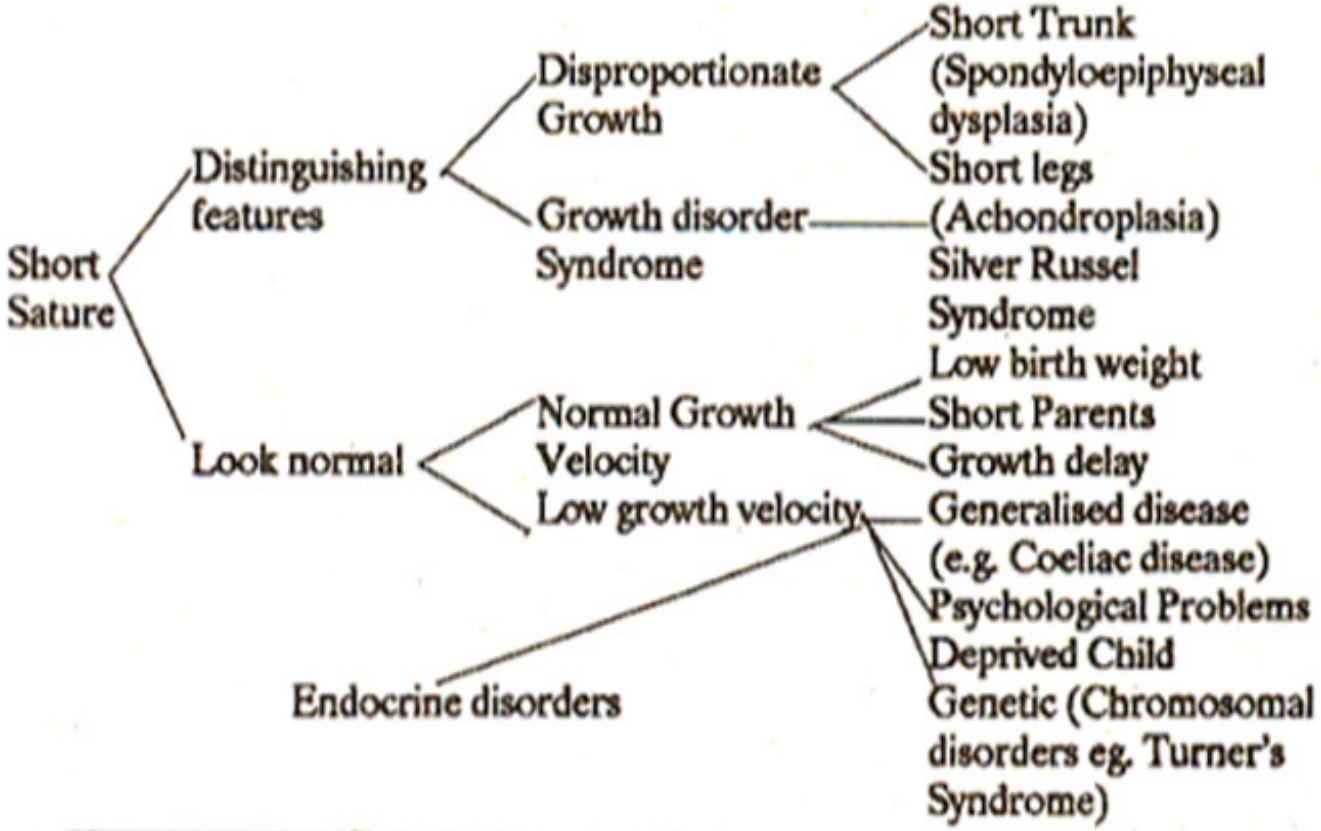


Figure 4. Etiology of Growth Disorders.

Figure 4 Hustrates this well and should be a good guide for proper evaluation. These two categories can be subdivided into normal growth velocity, low growth velocity and disproportionate growth and growth disorder syndromes respectively. The etiology of these disorders are shown in Figure 4. It is for the clinician to decide after a proper history and examination in which category the child fits in, investigate further and treat accordingly. Follow up on a centile chart of every case of short stature under treatment is a must.

CONCLUSION

Growth is the most sensitive index of well being in childhood. Like any observation in medicine care must be taken in obtaining accurate measurements otherwise this exercise would be useless. Assessment of growth velocity can be used not only in diagnosis of growth disorders but also in monitoring the response to therapy. The examination of a healthy child especially in school health services is incomplete without a measurement of his height.