By far the most common cause for referral to a pediatric endocrinology clinic is short stature. These referrals represent only the "tip of the iceberg," because pediatricians and general practitioners generally care for patients with delayed adolescence or familial short stature without consultation. Endocrine consultation confirms that the majority of patients referred are in these two categories. The growth of children without organic disease tends to parallel the third percentile for height. A few of these children have hypopituitarism or hypothyroidism. Most of them have syndromes in which the common manifestation is short stature, disorders of bone or cartilage, or other conditions for which there is as yet no molecular explanation nor specific therapy. Linear growth rate in children with organic disease generally falls below the third percentile in height.

Children and adolescents often base judgment of each others' adequacy and acceptability on size; males are also rated on athletic ability. Adult criteria of social status based on other standards (or prejudices) are of less importance to children. Children enjoy patronizing and belittling their smallest age mates just as some adults in subtle fashion enjoy behaving in the same way to their "inferiors."

Children called "squirt" or "runt" are given various kinds of parental advice. One of the most common (and useless) recommendations is to "ignore it" or "turn the other cheek." Some children find it effective to say to the tormenter, "You're too fat" or "Where'd you get all those pimples?" Exceptional children may gain some status by excelling in an area where size is unimportant (such as debating or light-weight wrestling). However, most children are not especially gifted and are simply left out. It is often at this point that medical advice is sought. The parents have sometimes heard of a relative who "received shots when he wasn't 'developing,' and he is now 6 feet tall." Others have read about human growth hormone (HGH) treatment of hypopituitarism. Parents, patients, and sometimes even the referring physician believe that the child should receive HGH or other medication, and expect the physician to "make him normal." What is available for short children who have no organic disease?

**PSYCHOLOGICAL MANAGEMENT**

The method of choice when dealing with the majority of short children is psychological management. Aspects of counseling patients with short stature have been reviewed. The natural course of events in untreated, constitutional short stature and delayed adolescence should be discussed with the parents and child. An estimate of final adult height can be made using the predictive tables of Bayley and Pinneau; however, these predictions tend to overestimate final height if there is delayed bone age. Often the simple reassurance about ultimately normal height is sufficient to satisfy many boys with delayed adolescence.

In a few university centers, psycho-endocrine divisions function in conjunction with the traditional endocrine units. There, patients—and their parents—who have not adjusted to short stature and/or delayed adolescence can be helped to adjust to the problem through counseling. Usually, short stature is only one of several interrelated difficulties which need to be defined and treated. The advantages and disadvantages of growth accelerating or virilizing agents are discussed so the parents and patient can participate in making an informed decision.
about the use of these agents. If “treatment”
with a pharmacologic agent is undertaken,
it is in conjunction with psychological
counseling. The patient and parents are in-
formed from the beginning that the prob-
lems uncovered during psychological coun-
seling may require time and effort to
deal with.

Expert psychological counseling is not
readily available in most centers, and the
need for more widespread development of
these services is evident. Usually the facili-
ties at hand must suffice.

BODY BUILDING

There is a high correlation between nu-
trition, growth rate, and the time of onset of
adolescent development. The underweight
child is generally short and slow-growing,
and sexual maturation is delayed. Frisch
and Revelle have shown a higher corre-
lation between size and maturational events
than age. In some instances this correlation
should be explained to the child to motivate
him to improve himself through appropriate
weight gain and muscle development. Chil-
dren in this age group are not motivated by
the parental admonishment, “finish your
dinner”; but, they can be greatly helped in
body building and the development of spe-
cial skills by their parents’ willingness
to devote 10 to 20 uninterrupted minutes with
them daily.

SYNTHETIC STEROIDS

Attempts have been made to dissociate
androgenic from somatotrophic activity in
drug preparations. In some clinical trials
oxandrolone and fluoxymesterone have
shown acceptable enhancement of linear
growth rate without compromising ultimate
height. This is because bone age advanced,
in general, at an equal pace with height age. Other studies showed a dispro-
portionately greater advance in bone age for oxan-
drolone and for fluoxymesterone; in these
patients the ultimate height is compromised.
The conflicting data on these and other
anabolic agents were recently reviewed.

At best, these agents merely accelerate
the growth rate to enable the child to be
somewhat taller, sooner. There is no evi-
dence that ultimate height of children with
familial short stature or delayed adol-
escence is improved.

Judicious use of anabolic agents is ac-
ceptable in a few short, prepubertal chil-
dren who, after careful evaluation, are
found to have no organic disease. If endo-
crine treatment is given, bone age must be
monitored at intervals of six months during
treatment, and the treatment should be dis-
continued in patients who show a more
rapid advance in skeletal maturation than
in height age so ultimate height will not be
jeopardized. Disproportionate advancement
of bone age can continue even after dis-
continuation of treatment.

The best response in terms of linear
growth rate is usually obtained during the
first 12 to 18 months of therapy. Side effects,
particularly growth of hair on the upper
lip, deepening of voice, and phallic or clitor-
al hypertrophy, are frequent but not se-
vere. Patients with a good growth response
generally prefer to continue therapy de-
spite the side effect(s).

One study of patients with Turner’s syn-
drome suggested that ultimate height may
be improved by treatment with fluoxy-
mesterone. However, growth hormone ad-
ministration will not improve linear growth
rate in Turner’s syndrome. Other organic
conditions are under investigation.

ANDROGEN THERAPY FOR DELAYED
ADOLESCENCE IN BOYS

As short boys get older, their height prob-
lem is aggravated by lack of secondary sex-
ual development. In selected patients who
desire it, short courses (two to four
months) of androgen therapy may be
beneficial without adversely affecting ulti-
mate height.

CONCLUSION

The common problem of short stature in
children who are growing at a normal rate
is best managed by clarification of, and at-
tention to, the psychological issues. This
may require referral for expert psycholog-
counseling. In a few instances, the physi-
cian, parents, and patient may agree
that carefully supervised use of one of the
synthetic steroids will be made on a
short-term basis in an attempt to accelerate
growth rate.

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