ABNORMAL GROWTH PATTERNS

Poor Nutrition and Systemic Diseases

- Nutritional deficiencies will cause poor growth A balanced diet with adequate calories and protein is essential for growth. There are a number of intestinal disorders which may lead to poor absorption of food.

- Failure to absorb nutrients and energy from food leads to growth failure. Children with these conditions may have complaints that involve the stomach or bowels and may have bowel movements that are unusual in pattern, appearance and odor.

- Diseases of the kidneys ,lungs & heart may lead to growth failure as a result of inadequate intake of nutrients or buildup of waste products and undesirable substances in the body. Children with diabetes , may grow slowly, particularly when their blood sugar is not kept near the normal range.

- Any disease that is severe, untreated or poorly controlled can have an adverse effect on growth. Severe stress or emotional trauma can also cause growth failure.

Bone Disorders •

extreme short stature is caused by abnormal formation and growth of cartilage and bone

Intrauterine Growth Retardation

Some infants are small at birth. When pregnancy ends earlier than usual, the baby is premature. These babies are small, but usually are normal size given their gestational age . However, some infants are shorter and weigh less than they should at birth

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- . In other words, they had a chance to grow in the uterus, but did not reach the length and weight they should have for their gestational age. This failure to grow normally in the uterus is called **intrauterine growth retardation.**

- This condition may result from a problem with the **placenta,** the organ in the mother's uterus that supplies nutrients and oxygen to the baby. A **viral infection**, such as German Measles, during pregnancy may affect the placenta and infant and cause intrauterine growth retardation.

- Sometimes the cause of this condition cannot be identified. Some of these children will remain small throughout life, while others may reach normal size.

Turner Syndrome

Short stature in girls may be caused by a genetic condition that affects the X chromosome. **Chromosomes** are small thread-like bodies in the nucleus of each cell; they contain the genetic material that determines the characteristics we inherit.

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. Two of these chromosomes determine sexual development - the X and Y chromosomes. Boys have one X and one Y chromosome, and girls have two X chromosomes.

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- In girls with Turner Syndrome, one of the X chromosomes is misshapen or missing in many or all body cells. Because of this, affected girls are short - they seldom reach 5 feet in height - and may have undeveloped ovaries . Intelligence is normal.

- Turner Syndrome may be suspected because of the presence of certain physical features, but poor growth is sometimes the only sign . Replacement of the missing ovarian hormones enables these girls to develop normal female sexual characteristics.

- Treatment with biosynthetic growth hormone appears to be effective in increasing adult height in many of these young women

Precocious Puberty

One type of unusual growth pattern is caused by the early onset of adolescence. This pattern occurs more frequently in girls than boys. The term sexual precocity is used to describe this condition, which includes early development of adult sexual characteristics.

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- Children with sexual precocity grow rapidly and are tall for their age initially, but their bones also mature rapidly, so they stop growing at an early age and may be short as adults.

A recently developed synthetic hormone (LHRH) is useful in halting this type of early sexual development and allowing additional growth.

- Sometimes a tumor or disease of the ovaries, adrenal glands, pituitary gland or brain will cause premature sexual development. In these cases, removal of the tumor or treatment of the disease may interrupt the rapid sexual development and result in increased adult height.

Thyroid Hormone Deficiency

- Hormone deficiencies may cause growth failure . A child with thyroid hormone deficiency has slow growth and is physically and mentally sluggish. Hypothyroidism, or lack of thyroid hormone, may be present at birth or develop anytime during childhood or later in life

- . It is very important to treat hypothyroidism , especially if it occurs during the rapid growth period of infancy.

- Untreated hypothyroidism during this time can cause permanent damage to sensitive, rapidly growing brain cells. Thyroid hormone deficiency is easy to diagnose with a simple blood test and easy to treat with a daily pill that replaces the missing thyroid hormone.

With early diagnosis and continuous treatment , these children grow and develop normally

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Growth Hormone Deficiency

- Although many hormones work together to stimulate normal growth, growth hormone is one of the most important. It is produced by pituitary gland. The pituitary gland makes other hormones that stimulate other glands, so it is sometimes called the master gland.

- Growth hormone deficiency may result from abnormal formation of the pituitary gland or hypothalamus, or damage to one of these areas occurring during or after birth.

- Children with growth hormone deficiency grow slowly, but have normal body proportions. Without treatment, few would reach 5 feet in height as adults.

- A child with growth hormone deficiency also may be missing other pituitary hormones, (thyroid, adrenal or stress hormones, sex hormones)

All hormones must be present in the proper balance for normal growth to occur, so these hormones must be replaced if they are missing. Biosynthetic human growth hormone, produced by recombinant DNA technology, is available for the Deficiency of growth hormone deficiency.

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- Children who are treated promptly and respond well to treatment can expect to reach normal adult height

Acromegaly

- Most tall children have tall parents and are healthy and normal, but there are some medical conditions that cause abnormal tall stature and rapid growth. A small tumor in the pituitary gland may cause too much growth hormone to be secreted, resulting in unusually fast growth and tall stature.

Growth hormone excess (also called acromegaly) may be treated with medication or with surgical removal of the tumor.

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