Growth Hormone Deficiency:

What is Growth Hormone Deficiency?

Growth hormone deficiency (GHD) is a medical condition characterized by insufficient production or secretion of growth hormone (GH) by the pituitary gland, a small gland located at the base of the brain. Growth hormone plays a crucial role in regulating growth, metabolism, and body composition, particularly during childhood and adolescence.

How Frequent is Growth Hormone Deficiency?

Estimates vary, but it is rare. The incidence is less than one in 3,000 to one in 10,000 children.

What Causes Growth Hormone Deficiency?

Growth hormone deficiency can occur due to various factors, including congenital abnormalities affecting the pituitary gland, acquired conditions that damage the pituitary gland, or genetic mutations affecting the production or function of growth hormone.

What Are Signs and Symptoms of Growth Hormone Deficiency?

Children with growth hormone deficiency may exhibit slower than normal growth rates, resulting in short stature. Other signs and symptoms of GHD may include:

1. Slower growth velocity: Children with GHD typically have a growth velocity (rate of growth) that falls below the expected range for their age and sex.
2. Delayed puberty: In addition to delayed linear growth, adolescents with GHD may experience delayed onset of puberty and delayed development of secondary sexual characteristics.
3. Reduced muscle mass and strength: Growth hormone plays a role in promoting muscle growth and strength. Children with GHD may have reduced muscle mass and strength compared to their peers.
4. Increased body fat: Growth hormone deficiency can lead to alterations in body composition, with affected individuals often having increased fat mass, particularly around the abdomen.
5. Delayed bone age: A bone age X-ray may reveal delayed skeletal maturation compared to chronological age in children with GHD.
6. Other symptoms: Children with severe GHD may also experience fatigue, decreased energy levels, poor concentration, and diminished quality of life.

How is Growth Hormone Deficiency Diagnosed?

Diagnosis of growth hormone deficiency typically involves a combination of clinical evaluation, growth chart analysis, hormone testing (such as GH stimulation tests and measurement of insulin-like growth factor 1 levels), and imaging studies (such as MRI of the brain to assess the pituitary gland).

How is Growth Hormone Deficiency Treated?

Treatment of growth hormone deficiency involves hormone replacement therapy with synthetic growth hormone injections. Growth hormone therapy can help stimulate linear growth, improve body composition, increase

muscle mass, and enhance overall well-being in children with GHD when started early and continued until adult height is reached. Close monitoring by healthcare providers is essential to optimize treatment outcomes and ensure appropriate growth and development.

What Are the Side Effects of Growth Hormone Treatment?

In general, there are few children who experience side effects from growth hormone. Side effects that have been described include severe headaches, hip problems, and problems at the injection site. To avoid scarring, you should place the injections at different sites. However, side effects are generally rare. Please read the package insert for a full list of side effects.

How is the Dose of Growth Hormone Determined?

The dose of growth hormone (GH) for growth hormone deficiency (GHD) is individualized based on several factors, including the child's age, weight, degree of GH deficiency, and response to treatment. Initially GH dose based on weight and disease condition which may need to decrease or increase based on clinical response and IGF-1 levels. Factors deciding GH dose are:

1. GH deficiency vs growth hormone resistance:
2. Weight-based dosing:
3. Target height:
4. Titration
5. Monitoring IGF-1 Levels
6. Target height
7. Age related adjustment
8. Adherence to treatment

What is the Prognosis for Growth Hormone Deficiency?

The prognosis for children with growth hormone deficiency (GHD) can vary depending on several factors, including the underlying cause of the deficiency, the timing of diagnosis and treatment initiation, adherence to treatment, and the child's overall health and response to therapy. In general, with early diagnosis and appropriate treatment, the prognosis for children with GHD is favorable.