

Keywords: Growth hormone therapy; Turner Syndrome; growth velocity

Turner Syndrome (TS) is a genetic disorder that affects females, resulting from the absence or partial absence of one of the two X chromosomes. Among the various challenges faced by girls with Turner Syndrome, short stature is a common characteristic, with the average adult height falling significantly below the average height of females without the syndrome. Growth hormone therapy (GHT) has emerged as a promising intervention to enhance linear growth and maximize adult height in these individuals. This article explores the effects of growth hormone therapy on the adult height of children with Turner Syndrome [1].

Growth hormone therapy involves the administration of synthetic human growth hormone (GH) to individuals with growth disorders, including Turner Syndrome. It aims to stimulate linear growth by increasing bone length and promoting overall skeletal development. GHT is typically initiated at an early age, often before puberty, and continued until near completion of growth.

Background:

Study Design: Retrospective or prospective cohort studies involving Turner Syndrome children receiving GHT. Randomized controlled trials (RCTs) comparing GHT with a control group (without GHT) for adult height outcomes. Longitudinal observations with regular follow-up assessments to track growth and height progression [4].

Study Population: Girls diagnosed with Turner Syndrome, receiving GHT as part of their treatment.

Exclusion Criteria: Individuals with other medical conditions affecting growth or height, individuals with incomplete data or inadequate follow-up.

Data Collection: Gather baseline demographic information, including age, bone age, pubertal stage, and Tanner staging. Record details of growth hormone treatment, including dosage, frequency, and duration of therapy. Document height measurements at regular intervals throughout the treatment period and into adulthood. Collect relevant data on genetic variations [5].

Control Group: For RCTs, assign a control group of Turner Syndrome children not receiving GHT or receiving a placebo. Control group participants should match the treatment group in terms of age, bone age, and other relevant factors.

Data Analysis: Calculate growth velocity (cm/year) for each participant during the treatment period. Compare adult height outcomes between the GHT group and the control group, if applicable. Perform statistical analysis using appropriate methods (e.g., t-tests, chi-square tests, regression analysis) to assess the significance of the results. Consider potential confounding factors (e.g., compliance, genetic variations) in the analysis.

Follow-up: Conduct regular follow-up assessments to track adult height outcomes beyond the treatment period. Monitor for any adverse effects or side effects associated with growth hormone therapy. Continue data collection and analysis to evaluate the long-term effects of GHT on adult height.

Ethical Considerations: Obtain informed consent from participants or their legal guardians. Adhere to ethical guidelines and regulations for the conduct of research involving human subjects. Ensure confidentiality and privacy of participant data [6].

Several studies have investigated the effects of growth hormone therapy (GHT) on the adult height of children with Turner Syndrome. Here are some key findings from the research:

Height Gain: Girls with Turner Syndrome who received GHT demonstrated significantly increased adult height compared to those without treatment. The average height gain varied across studies but ranged from several centimetres to over 10 centimetres.

Growth Velocity: Growth hormone therapy not only increased final adult height but also improved growth velocity during childhood and adolescence. Turner Syndrome children receiving GHT showed a more rapid rate of growth compared to untreated individuals.

Timing of Treatment: Early initiation of growth hormone therapy, preferably before the age of 4-6 years, was associated with better adult height outcomes. Starting treatment at an older age may limit the potential for catch-up growth and result in a less significant height increase [7].

Treatment Duration: Longer durations of growth hormone therapy were generally associated with greater height gains. Studies have reported positive outcomes with treatment durations ranging from several years to near completion of growth.

Genetic Factors: Genetic factors unique to each individual may influence the response to growth hormone therapy. Variations in the growth hormone receptor gene and other genetic modifiers can affect the growth response and adult height outcomes.

Adherence and Compliance: Adherence to treatment regimens and proper dosage administration are crucial for optimal height outcomes. Good compliance with growth hormone therapy is essential to maintain consistent hormone levels and sustain the positive effects [8].

Individual Variability: It is important to note that individual responses to growth hormone therapy may vary due to factors such as age, compliance, and genetic variations. While significant height gains are observed on average, s-7(h)19(t (en)19(tr1)4(cr)4i)-3(a)19(t)]T(y m)3(

