

Early Detection of Abnormal Growth Associated with Juvenile Acquired Hypothyroidism

Saari A, Pokka J, Mäkitie O et al. J Clin Endocrinol Metab. 2021 Jan 23;106(2):e739-e748

Background: The growth patterns among juvenile acquired hypothyroidism (JHT) patients are insufficiently explored. The typical growth phenotype in JHT (i.e., faltering linear growth with increasing weight) evolves over time and would reflect the gradual development of thyroid deficiency.

Objective: To describe longitudinal growth pattern in children developing JHT and investigate how their growth differs from the general population in systematic growth monitoring.

Design: Retrospective case-control study.

Setting: JHT cases from 3 Finnish University Hospitals & healthy matched controls from primary health care.

ACADEMIC P.E.A.R.L.S**P**ediatric **E**vidence **A**nd **R**esearch **L**earning **S**nippet

Abnormal growth 'evolves years' before juvenile acquired hypothyroidism diagnosis

Results:

- At the time of JHT diagnosis, the patients were heavier and shorter than the controls, with a mean adjusted BMI standard deviation score (SDS) difference of 0.65 and a height SDS deviation from target height SDS (THDEV SDS) of -0.34 (95%CI, -0.57 to -0.10) than healthy controls.
- At 5 years before their diagnosis, JHT patients were taller & heavier than the healthy individuals, the mean adjusted differences of THDEV SDS and BMISDS were 0.32 and 0.44 respectively.
- 2 years before diagnosis, there was significantly slower linear growth in the JHT cohort than the control group, with a mean adjusted change in height SDS difference of 0.53. The greatest difference in change in height SDS was found in the year before JHT diagnosis, with a mean difference of -1.06.
- The best screening accuracy was accomplished if linear growth change (Δ HSDS) is monitored. Using a cutoff of ± 1.7 SDS for Δ HSDS and BMISDS, was able to detect JHT with 45% sensitivity and 89.7% specificity, with corresponding values of 16.1 % and 99.2% when using a ± 2.7 SDS threshold.

Conclusion:

Children and adolescents with juvenile acquired hypothyroidism showed distinct longitudinal growth patterns in height and weight as many as 5 years before diagnosis. Early detection of JHT is important not only for neurocognitive development but also for preventing a permanent height deficit resulting from thyroid hormone deficiency.

Key message:

Abnormal growth pattern of patients with juvenile acquired hypothyroidism evolves years before diagnosis. Systematic growth monitoring would detect abnormal growth at an early phase of juvenile acquired hypothyroidism and facilitate timely diagnosis of juvenile acquired hypothyroidism

EXPERT COMMENT

“Systematic monitoring of growth facilitates early diagnosis. A significant number of adolescents diagnosed with juvenile acquired hypothyroidism could have been detected earlier using longitudinal growth monitoring and auxological screening. Accurate serial growth measurements documented over time on a growth chart are much more important than a single or ‘one-off’ reading. This study emphasizes that an abnormal growth pattern may be an early warning of a clinically significant but as yet undiagnosed condition.”

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With warm regards,

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Reference

Antti Saari, Jari Pokka, Outi Mäkitie, Marja-Terttu Saha, Leo Dunkel, Ulla Sankilampi, Early Detection of Abnormal Growth Associated with Juvenile Acquired Hypothyroidism, *The Journal of Clinical Endocrinology & Metabolism*, Volume 106, Issue 2, February 2021, Pages e739-e748, <https://doi.org/10.1210/clinem/dgaa869>