

0023 - CHANGES IN THYROID HORMONES DURING THE ONSET AND PROGRESSION OF PUBERTY. IS IT NECESSARY TO SEPARATE BY SEX TO ESTABLISH REFERENCE RANGES?

Mode: Research paper

Thematic Unit: Thyroid

Thematic Unit 2: Puberty

ZAIDMAN, Veronica Ethel | CHALER, Eduardo | DOLCE VILLANUEVA, Ayelen Anabella | DUJOVNE, Noelia | GAZEK, Natalia Alejandra | RODOLFO, Recalde | PELANDA, Melina Belen | ZABALETA, Florencia | LAZZATI, Juan Manuel

Hospital de Pediatría JP Garrahan

Background/Objectives: Laboratory tests are a fundamental tool in diagnosing and monitoring thyroid disease. Accurate interpretation requires an appropriate reference interval (RI). Previous studies report significant gender-related differences in thyroid hormones among adolescents, whereas others do not confirm these findings. Our aim was to investigate the existence of sex-specific differences between pre-pubertal and pubertal groups and to determine if it is necessary to group them separately in order to establish useful reference ranges in the population aged 8 to 18 years.

Methods: A database of pediatric patients studied in a tertiary care hospital between 2020 and 2021 aged 8 to 18 years with normal TSH (n:2158) was used; a series of filters were applied to exclude conditions that might affect thyroid function. The boys (B)(n=943) were divided into two groups: B1 aged 8-13 years (n=650) and B2 aged 14-18 years (n=293); the girls (G)(n=1215) were divided into two groups: G1 aged 8-12 years (n=630) and G2 aged 13-18 years (n=585). TT3 and FT4 measurements were performed by CMIA (Architect, Abbott) and TT4 by chemiluminescence (Immulite, Siemens). The Mann-Whitney test was used to test for significant differences between groups. RIs were calculated for the groups in which significant differences were found, using a CLSI-approved indirect method for non- parametric analytes. The percentage difference (%) between the RIs obtained was calculated, and the expanded uncertainty (Uexp%) was used as a comparison parameter.

Results: Significant differences were found between B and G for TT3 and FT4; between B1 and B2, and between G2 and B2 for TT3 and TT4, between G1 and G2 for TT3, and between G1 and B1 for FT4. Furthermore, significant differences were found in TT3 when comparing the sum of G1 and B1 with the sum of G2 and B2. The percentage difference between the calculated RIs exceeded Uexp% in the following



cases: for TT3 G1 vs G2, B1 vs B2 and G1+B1 vs G2+B2, but not for the comparisons of B vs G, B1 vs G1 and B2 vs G2.

Conclusion: Although significant differences were found between groups B and G for TT3 when they were compared; the RIs did not differ above the Uexp% margin. The RIs for the groups G1+B1 and G2+B2 were different, suggesting that these groups should be separated when establishing RIs. This was not the case for the RIs of groups B and G, so it would not be necessary to establish separate RIs by sexes for thyroid hormones in our study population.

