

0038 - PEDIATRIC DIFFERENTIATED THYROID CARCINOMA IN PATIENTS WITH HEREDITARY TUMOR PREDISPOSITION SYNDROMES

Mode: Research paper

Thematic Unit: Thyroid

PRINGLES GRANEL, Maria Victoria | GAZEK, Natalia Alejandra | VAIANI, Elisa | CÉSAR RAMÍREZ, Pablo | PEREZ GARRIDO, Natalia | BELGOROSKY, Alicia | MARINO, Roxana | HERZOVICH, Viviana | DUJOVNE, Noelia

Hospital de Pediatría Prof. Dr. J.P. Garrahan

Background/Objectives: Differentiated thyroid carcinoma (DTC) in pediatric patients is usually sporadic and rarely occurs as part of a hereditary tumor predisposition syndrome (HTPS). HTPS associated with DTC includes DICER1 syndrome, PTEN syndrome (PHTS), and Lynch syndrome. Identifying HTPS is clinically relevant as thyroid carcinoma may be part of their phenotypic spectrum and requires appropriate surveillance. Aim: To describe pediatric patients with DTC associated with HTPS and characterize tumor histopathology, age at diagnosis, initial recurrence risk (IRR) according to the American Thyroid Association 2015 guidelines (ATA), and response to treatment.

Methods: A retrospective descriptive study included 144 pediatric patients diagnosed with DTC between 2014 and 2025. Clinical, pathological, ATA 2015 IRR, and outcome data were evaluated in patients with DTC associated with HTPS. Genetic diagnosis was established by next-generation sequencing (NGS) panels for thyroid cancer-related genes (n=5) or through clinical suspicion followed by confirmatory molecular testing using Sanger sequencing and hereditary cancer NGS panels (n=5). One patient fulfilled clinical criteria for neurofibromatosis type 1 (NF1).

Results: 12/144 (8.3%) patients had DTC associated with HTPS, 75% were female and the median age at DTC diagnosis was 15 years (range: 6–17). Six patients (50%) had DICER1 syndrome, three (25%) PHTS, two (17%) Lynch syndrome, and one (8%) NF1. Among patients with DICER1 syndrome, five had follicular variant papillary thyroid carcinoma (fvPTC) and one follicular thyroid carcinoma (FTC). PTC cases were classified as high IRR (n=1), intermediate IRR (n=1), and low IRR (n=3); all had an excellent response to treatment. The FTC case was classified as low IRR. All patients with PHTS had classic variant PTC (cvPTC) and low IRR; two had excellent response to treatment and one persistent disease. Lynch syndrome was identified in two sisters, with a maternal history of cancer. The index case had fvPTC with low IRR. Screening ultrasound in her older sister revealed a cvPTC with intermediate IRR. Both had an excellent response. The NF1 patient initially presented with a thyroid



neurofibroma (right lobe) and later developed a papillary thyroid microcarcinoma (left lobe), classified as low IRR.

Conclusion: Thorough physical examination and detailed personal and family history are essential to identify patients with HTPS, enabling appropriate genetic counseling, surveillance, and family screening. We highlight the necessity of thyroid screening in patients with known HTPS. Despite generally favorable outcomes, some patients developed persistent disease, supporting individualized long-term follow-up.

