

Congress Abstract

Clinical-Pathological and Molecular Predictors of Recurrence in Papillary Thyroid Cancer in Adolescent and Young Adult Patients in the Republic of Kazakhstan

Mussulmanova Madina Aziyatovna¹, Pak Laura Alekseevna¹

¹Department of Clinical Oncology, Radiology and Nuclear Medicine named after Professor D. R. Mussinov, NCJSC "Semey Medical University," Semey, Republic of Kazakhstan

²National Research Oncology Center, Astana, Republic of Kazakhstan

Proceedings of International Scientific and Practical Conference "ONCO FUTURE KAZAKHSTAN 2026: Precision Oncology Theranostics, Artificial Intelligence," September 24-26, 2026, Astana, Kazakhstan

Corresponding author's email:
87madina87@mail.ru

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Introduction: Papillary thyroid cancer (PTC) is characterized by a favorable prognosis; however, disease recurrence remains a clinically significant problem among adolescent and young adult (AYA) patients. The prognostic role of molecular alterations in this age group remains insufficiently studied, especially in Central Asian populations.

Objective: To evaluate clinical-pathological and molecular factors associated with PTC recurrence in young adult patients from Kazakhstan.

Materials and Methods: This retrospective multicenter study included 246 patients with histologically confirmed PTC. Tumor tissue samples obtained between 2016 and 2020 were collected at three specialized oncology centers in Kazakhstan: the Kazakh Institute of Oncology and Radiology (Almaty), the Center for Nuclear Medicine and Oncology (Semey), and the Multidisciplinary Center of Oncology and Surgery (Ust-Kamenogorsk). Clinical-pathological characteristics and molecular genetic alterations were analyzed in relation to recurrence risk and survival outcomes. Multivariate regression analysis and time-to-event methods were used to identify factors associated with recurrence, progression-free survival (PFS), and overall survival (OS).

Results: In the AYA subgroup, none of the evaluated clinical-pathological or molecular factors retained a statistically significant association with recurrence after multivariate adjustment. TERT promoter alterations demonstrated the largest estimated association with recurrence (odds ratio [OR] 9.05; 95% confidence interval [CI] 1.00–59.86; $p = 0.333$); however, statistical significance was not reached. In the overall cohort, the presence of lymph node metastases demonstrated the most pronounced trend toward worse PFS (hazard ratio [HR] 9.61; 95% CI 0.92–100.49; $p = 0.059$). No statistically significant clinical-pathological or molecular predictors of overall survival were identified.

Conclusions: The risk of PTC recurrence in young adult patients is characterized by heterogeneity and cannot be fully assessed based on clinical-pathological factors alone. TERT promoter alterations may have potential prognostic significance. Larger prospective studies in the Central Asian population are needed to clarify the role of molecular markers and improve individual risk stratification.

Keywords: Papillary Thyroid Cancer; Adolescents and Young Adults; Recurrence; Risk Stratification; TERTp