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Papillary thyroid cancer pathology - the modern challenge for multiprofile research teams.

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Papillary thyroid cancer (PTC) constitutes a significant diagnostic problem. For many years cell nuclei images were considered the key morphological parameter of PTC. Within the last few years non-invasive thyroid neoplasm with papillary-like nuclear features (NIFTP) were distinguished and included in the WHO classification (2017). That allows for avoiding onerous treatment in a large percentage of cases, but simultaneously makes PTC diagnostics more complicated in terms of qualifying patients to the risk group.

In my research I used DNA damage markers (53BP1, H2A.X) to asses PTC and NIFTP

stroma. I aimed at proving the connection between the damaged stroma cells and the type of tumor.

The most important PTC prognostic factor is age related to cell aging processes. One of the aging mechanisms is genetic material damage. Damaged cells acquire paracrine features resulting in various secreta (proinflammatory, stimulating growth or angiogenesis, etc.) favoring the development of malignant tumors. The research results determine the difference between the number of damaged fibroblasts in the PTC stroma and the stroma of NIFTP. Expression of 53BP1 and H2A.X was significantly larger in the case of PTC and there was connection between malignancy and stroma consistency.

The stroma-cell damage phenomena are not included in the routine histopathological diagnostics and pathologists' knowledge is limited in this respect. This in turn limits the search for new PTC-related solutions. Integrating research teams via Digital Pathology will broaden research horizons and contribute to developing effective diagnostics and actual PTC prognoses.

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