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Diagnostic challenges in lung neuroendocrine tumors

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Lung neuroendocrine tumors (NETs) are a heterogeneous group of neoplasms that include carcinoid tumors, typical and atypical carcinoids, and neuroendocrine carcinomas (NECs). The diagnosis of these tumors is often challenging due to their morphological and immunohistochemical similarities with other lung neoplasms.

Carcinoid tumors are the most common type of NET, accounting for approximately 15% of all lung neoplasms. They are characterized by their well-circumscribed, organoid growth pattern and low mitotic rate. Immunohistochemically, they are typically positive for neuroendocrine markers such as chromogranin (CgA), synaptophysin (Syn), and neurokinin B (NKB).

Typical and atypical carcinoids are also well-circumscribed but differ from carcinoid tumors in their histological features and immunohistochemical profile. Typical carcinoids are characterized by a low mitotic rate and absence of necrosis, while atypical carcinoids have a higher mitotic rate and may show focal necrosis.

NECs are highly aggressive and are characterized by a high mitotic rate, necrosis, and a lack of organoid architecture. They are immunohistochemically positive for neuroendocrine markers but also show strong reactivity for cytokeratins (CKs).

The differential diagnosis of NETs includes primary lung adenocarcinoma, squamous cell carcinoma, and metastatic disease. Immunohistochemistry and molecular testing, such as Ki67 staining, can be helpful in distinguishing these tumors.

In conclusion, the diagnosis of lung NETs requires a combination of histological, immunohistochemical, and molecular findings. A thorough understanding of the morphological and immunohistochemical features of these tumors is essential for accurate diagnosis.

Biography

Mark Podberezin has completed his Medical School Degree (MD) and subsequent Clinical Hematology/Oncology training and PhD in Russia. Later, he did his Residency in Anatomic and Clinical Pathology at University of Illinois at Chicago and Hematopathology Fellowship at Texas Methodist Hospital in Houston. He is an Anatomic Pathologist (with special interest in Lung Pathology) and Hematopathologist at Royal University Hospital, University of Saskatchewan, Canada. He published 14 papers and presented at national, as well as international meetings.

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