Diagnostic challenges in surgical pathology: Rare and uncommon entities.

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Introduction

Surgical pathology involves the examination of tissues and organs removed during surgical procedures to diagnose diseases. While most cases encountered by pathologists fall within established diagnostic categories, there are instances when they come across rare and uncommon entities. These entities often lack well-defined diagnostic criteria, making their accurate identification and classification challenging. The purpose of this article is to shed light on the diagnostic challenges faced in surgical pathology when dealing with such cases and to emphasize the importance of various diagnostic tools in achieving an accurate diagnosis [1].

Histopathological examination forms the cornerstone of diagnostic evaluation in surgical pathology. However, rare and uncommon entities often exhibit overlapping histological features with more common diseases, making accurate diagnosis challenging. In such cases, pathologists rely on their expertise, extensive knowledge base, and utilization of ancillary techniques to reach a definitive diagnosis. The significance of meticulous histopathological examination cannot be overstated, as even subtle morphological features may provide vital clues for differential diagnosis [2].

Immunohistochemistry (IHC) plays a crucial role in the diagnosis of rare and uncommon entities. By utilizing specific antibodies that recognize various cellular markers, IHC can help differentiate between different tumor types, identify specific cellular components, and assess the proliferative activity of neoplastic cells. In challenging cases, the judicious selection and interpretation of IHC markers aid in narrowing down the differential diagnosis and providing valuable insights into the underlying pathology [3].

The advent of molecular pathology has revolutionized the field of surgical pathology, particularly in cases with diagnostic uncertainties. Genetic alterations, gene mutations, and chromosomal rearrangements can often define rare and uncommon entities more precisely. Techniques such as fluorescence in situ hybridization (FISH), polymerase chain reaction (PCR), and next-generation sequencing (NGS) enable the identification of specific molecular signatures that aid in accurate diagnosis and subclassification of tumors. Molecular pathology has not only improved diagnostic accuracy but also contributed to the development of targeted therapies for certain rare entities [4].

To exemplify the diagnostic challenges encountered in surgical pathology, we present a compilation of intriguing case reports. These cases involve rare and uncommon entities where pathologists faced dilemmas in reaching a definitive diagnosis. Each case highlights the complexities, the use of ancillary techniques such as histopathology, immunohistochemistry, and molecular pathology, and the final diagnostic outcome [5].

Conclusion

Diagnostic challenges in surgical pathology arise when dealing with rare and uncommon entities. Meticulous histopathological examination remains the foundation of accurate diagnosis, complemented by the judicious use of immunohistochemistry and molecular pathology. Collaboration among pathologists, clinicians, and researchers is crucial to broaden our understanding of these entities and to improve diagnostic accuracy and patient outcomes. Continuous advancements in diagnostic techniques and the accumulation of knowledge through case reports and research will undoubtedly enhance our ability to tackle the diagnostic challenges posed by rare and uncommon entities in surgical pathology.

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