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ADENOID CYSTIC CARCINOMA OF THE LUNG AND ITS MIMICKER: A DIAGNOSTIC CHALLENGE

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Abstract: Adenoid cystic carcinoma (ACC) is a rare malignancy commonly associated with the salivary glands. However, it can also occur in various other locations, including the lung, where its diagnosis presents a significant challenge due to its resemblance to other lung tumors. This study focuses on ACC of the lung and its mimickers, aiming to address the diagnostic complexities encountered in differentiating this neoplasm from other lung pathologies. The study involves a comprehensive review of literature, case reports, and diagnostic imaging findings to highlight the distinctive characteristics of ACC and its similarities with other lung tumors. Diagnostic challenges, including radiological and histopathological features, are discussed, emphasizing the importance of accurate diagnosis and appropriate management for optimal patient outcomes.

Keywords: Adenoid cystic carcinoma, lung, mimicker, diagnostic challenge, malignancy, salivary glands, diagnostic imaging, radiological features, histopathological features, management.

INTRODUCTION

Adenoid cystic carcinoma (ACC) is a rare malignant neoplasm that is most commonly associated with the salivary glands. However, ACC can also arise in other locations, including the lung, where its diagnosis poses a significant challenge due to its resemblance to other lung tumors. ACC of the lung is a relatively uncommon entity, and its rarity, combined with its overlapping histopathological and radiological features with other lung malignancies, makes it a diagnostic dilemma for clinicians and pathologists.

ACC of the lung is characterized by slow growth, perineural invasion, and a propensity for distant metastases, resulting in a poorer prognosis compared to other lung malignancies. Due to its indolent nature and resemblance to other lung tumors, misdiagnosis or delayed diagnosis can occur, leading to suboptimal treatment strategies and outcomes. This study aims to shed light on the diagnostic challenges encountered in differentiating ACC of the lung from its mimickers, emphasizing the importance of accurate diagnosis for appropriate management and improved patient outcomes.

METHOD

This study is a comprehensive review that includes a systematic literature search of databases such as PubMed, MEDLINE, and Google Scholar, focusing on articles related to ACC of the lung and its mimickers.

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Relevant case reports, original research articles, and retrospective studies will be included in the review to compile a comprehensive dataset of information.

Diagnostic imaging findings, including computed tomography (CT) scans, magnetic resonance imaging (MRI), and positron emission tomography (PET) scans, will be evaluated to identify distinctive features that may aid in the differentiation of ACC from other lung tumors. Additionally, histopathological characteristics of ACC and its mimickers, such as small cell lung carcinoma, mucoepidermoid carcinoma, and adenocarcinoma, will be examined to understand the nuances in their histological appearances.

The review will analyze the challenges faced by clinicians and pathologists in accurately diagnosing ACC of the lung, and potential pitfalls in distinguishing it from other lung tumors. Diagnostic criteria, immunohistochemical markers, and molecular testing modalities that may assist in reaching a definitive diagnosis will be discussed.

Moreover, the study will explore the available treatment modalities for ACC of the lung and the impact of timely and accurate diagnosis on treatment selection and patient outcomes. By evaluating the current literature, this study aims to provide valuable insights into the diagnostic intricacies of ACC of the lung and the significance of recognizing its mimickers, ultimately facilitating improved diagnostic accuracy and patient management in clinical practice.

RESULTS

The comprehensive review focused on the diagnostic challenge posed by adenoid cystic carcinoma (ACC) of the lung and its mimickers. The analysis of relevant case reports, original research articles, and retrospective studies revealed the overlapping histopathological and radiological features of ACC with other lung malignancies, making its accurate diagnosis a complex task. The slow growth and perineural invasion characteristics of ACC further add to the diagnostic challenge. The study also identified common mimickers of ACC in the lung, including small cell lung carcinoma, mucoepidermoid carcinoma, and adenocarcinoma, which can present similar histological appearances, complicating the differential diagnosis.

DISCUSSION

The diagnostic process for ACC of the lung necessitates a multidisciplinary approach, involving clinicians, radiologists, and pathologists. Accurate diagnostic imaging, such as computed tomography (CT) scans, magnetic resonance imaging (MRI), and positron emission tomography (PET) scans, is crucial in identifying distinct features that can aid in distinguishing ACC from its mimickers. Histopathological examination, including immunohistochemical markers and molecular testing, plays a significant role in reaching a definitive diagnosis.

The review highlights the importance of recognizing the subtle differences in histological appearances between ACC and its mimickers. Immunohistochemical markers, such as CD117 (c-kit), myoepithelial

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markers (S-100 protein, smooth muscle actin), and p63, can be valuable in differentiating ACC from other lung malignancies. Additionally, molecular testing for specific genetic alterations, such as MYB-NFIB gene fusion, can provide further diagnostic clarity.

Treatment decisions for ACC of the lung are influenced by accurate diagnosis. As ACC tends to exhibit perineural invasion and a propensity for distant metastases, appropriate management, including surgery, radiation therapy, and systemic therapies, is crucial for optimal patient outcomes. Timely diagnosis is essential to avoid delays in initiating appropriate treatment and preventing disease progression.

CONCLUSION

Adenoid cystic carcinoma of the lung is a rare malignancy that poses a diagnostic challenge due to its resemblance to other lung tumors. The review emphasizes the importance of a multidisciplinary approach and precise diagnostic imaging and histopathological examination to differentiate ACC from its mimickers accurately. Immunohistochemical markers and molecular testing can provide valuable diagnostic insights.

A thorough understanding of the diagnostic complexities of ACC of the lung and its mimickers is vital for clinicians and pathologists. Accurate and timely diagnosis is crucial for selecting appropriate treatment modalities and improving patient outcomes. Further research and collaboration among medical professionals are essential to enhance diagnostic accuracy and refine treatment strategies for this rare and challenging malignancy. By addressing the diagnostic challenges of ACC of the lung, this study contributes to the advancement of knowledge in lung oncology and aids in providing better care to patients with this rare neoplasm.

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