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Histopathological Features of Chest Wall Masses: A Systematic Review

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ABSTRACT

Introduction: Trauma, infections, inflammation, or cancer can cause chest wall masses. These tumors can be benign or malignant and originate from different structures of the chest wall. The medical community should use a proper method to estimate tumor histopathology and avoid complications. This systematic review and meta-analysis aimed to investigate the histopathological characteristics of chest wall masses.

Search Strategy: PubMed, Scopus, and Web of Science databases were searched for studies that reported the histopathological features of chest wall masses till August 4, 2022. No filters were applied to search fields, such as date, study type, or language. Two independent researchers screened the records and then extracted the data using a data extraction table. Studies were assessed for the risk of bias using the Joanna Briggs Institute critical appraisal tools. The third version, comprehensive meta-analysis, was utilized for the quantitative synthesis. The malignancy rate in all chest wall cases was calculated, and 95% confidence intervals (CIs) were observed. Heterogeneity was statistically calculated using the standard I^2 test. A sub-group analysis based on the biopsy methods was also conducted, and the results were presented in forest plots.

Results: Nine studies were included in the final review. Studies comprised 1,279 patients, with chest wall masses from all age groups. Biopsy methods such as fine-needle aspiration biopsy, cutting needle biopsy, and surgical resection biopsy were used to evaluate the pathology of the masses. The malignancy rate in chest wall masses varied depending on the biopsy method, ranging from 47.3% in needle biopsy (95% CI: 0.273-0.681; I^2: 74.5%) to 56.8% in surgical resection biopsy (95% CI: 0.366-0.750; I^2: 67.4%). The overall malignancy rate in chest wall tumors was 52.3% (95% CI: 0.376-0.666; I^2: 98.6%).

Conclusion and Discussion: About half of the chest wall masses are malignant, emphasizing the importance of accurate diagnosis and appropriate treatment selection. Choosing the proper biopsy method is crucial for achieving successful outcomes. Further research with larger sample sizes and improved reporting is required to better understand chest wall tumor pathology and improve patient outcomes.

Keywords: Pathology, Neoplasms, Systematic review, Thoracic wall

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