The Continuing Need For Electron Microscopy In Diagnosing Pediatric Lung Biopsies: A 12-Year Retrospective Study

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Abstract

Background

Pediatric diffuse lung diseases encompass variety of entities, from developmental and functional disorders to conditions overlapping with adult pathologies. Pathologic evaluation, including electron microscopy (EM), has historically been pivotal in diagnosing these disorders. Despite advancements in genetic diagnostics reducing the reliance on lung biopsies, they remain crucial in critically ill children when non-invasive methods fail to yield definitive diagnosis quickly.

Aim

This study aims to evaluate the need for EM in pediatric lung biopsies and its contribution to final diagnoses over a 12-year period in our Pathology Division.

Methods

A retrospective evaluation of 89 pediatric lung biopsies from our division between 2010 and 2022 was conducted to assess the contribution of EM to final diagnosis.

Results

Out of the 89 biopsies, 73 were from children younger than two years. EM was particularly valuable in diagnosing lung conditions in this younger population. EM was crucial in establishing final diagnosis in 37% of cases, especially for surfactant disorders and interstitial glycogenosis. Additionally, absence of characteristic ultrastructural abnormalities aided in narrowing differential diagnoses and excluding/confirming entities, establishing diagnoses in conjunction with other findings/testing.

Conclusion

EM remains a crucial tool in pediatric lung pathology. Its low cost, minimal tissue requirement, and rapid diagnostic capability justify its continued use.