Comparative Analysis of Diagnostic Methods for Differentiating Hodgkin Lymphoma and Non-Hodgkin Lymphoma

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Abstract

Lymphomas, a category of cancers like Hodgkin lymphoma (HL) and non-Hodgkin lymphoma (NHL), pose significant health challenges globally, underscoring the vital need for precise diagnostic methods. This review aims to assess and compare traditional histopathology with advanced diagnostic approaches like immunohistochemistry, molecular profiling, and machine learning to understand their strengths and limitations in classifying lymphomas. The methodology involves a structured interview with a histopathological specialist and an extensive literature review, focusing on some selected papers. The analysis highlights the prominence of machine learning algorithms, especially Convolutional Neural Networks, signaling a shift towards automated diagnosis. While immunohistochemistry and molecular profiling are widely used, integrating advanced technologies is still early. This review offers insights into current lymphoma diagnostic practices, pinpointing research gaps and stressing the need for more focused studies to overcome challenges for future advancements in the field. Future directions involve applying this knowledge, like developing machine-learning systems to enhance lymphoma diagnosis and bridging the gap between research and practical implementation.

Keywords: *Hodgkin lymphoma, Non-Hodgkin lymphoma, Diagnosis methods, Histopathology, Machine learning, Convolutional neural network*