Infiltration and Subtype Analysis of CD3+CD20+ T Cells in Lung Cancer

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Abstract

Background: CD3+CD20+ T cells are a subset of lymphocytes in the human body that are associated with inflammation. They originate from T cells interacting with B cells, and their levels are abnormally elevated in individuals with immune disorders, as well as in some cancer patients. The interplay between tumor immunity and inflammation is intricate, yet the specific involvement of CD3+CD20+ T cells in local tumor immunity remains uncertain, with limited research on their subtypes. *Objective*: To investigate the presence of CD3+CD20+ T cells in the tumor microenvironment and analyze their subtypes. *Method*: Lung cancer surgical samples were stained using multi-color immunofluorescence to study the subtypes and distribution patterns of CD3+CD20+ T cells. *Result*: CD3+CD20+ T cells were confirmed to exist in a scattered pattern within tertiary lymphoid structures (TLS) in lung cancer tissues, with higher abundance in mature TLS. In subtype analysis, the CD4-CD8- double-negative T cell subtype was predominant, comprising over 90% in samples with abundant TLS infiltration and over 60% in samples with poor infiltration. This was followed by the CD4+CD8- and CD4-CD8+ single-positive T cell subtypes, while the CD4+CD8+ double-positive T cell subtype was nearly absent. During the maturation of TLS, the proportion of B cells gradually increased, while the proportion of CD4-CD8- T cell subtype decreased. *Conclusion*: CD3+CD20+ T cells may participate in the local tumor immune response by regulating TLS formation and development, with the double-negative T cell subtype potentially playing a predominant role. This finding could facilitate the advancement of novel cancer treatment strategies.

Keywords

Lung Cancer, Tumor Immune Microenvironment (TME), Tertiary lymphoid Structures (TLS), CD3+CD20+ T Cell, Double Negative T Cell