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Original Research Article

Extra-Nodal Non-Cutaneous Peripheral T cell Lymphoma: Common Peripheral Blood Findings and Clinical Follow-Up

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Abstract:

This retrospective observational study conducted at Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, aimed to elucidate the peripheral blood findings and clinical outcomes in 60 patients diagnosed with extra-nodal non-cutaneous peripheral T-cell lymphoma over one year from May 2023 to April 2024. Our results highlighted a high prevalence of cytopenias, with 70% of patients exhibiting anemia, 50% thrombocytopenia, and 33.3% leukopenia. Atypical lymphocytes were present in 80% of the cohort, indicating significant hematological disruption. The majority of patients were treated with the CHOP regimen, yet only 30% achieved complete remission, underscoring the aggressive nature of this lymphoma subtype. The overall 1-year survival rate was observed at 50%, with advanced-stage disease at diagnosis and the presence of significant cytopenias being predictive of poorer outcomes. These findings emphasize the need for early detection and more effective treatment strategies to improve survival rates in this patient population.

Keywords: Peripheral T-cell Lymphoma, Cytopenias, CHOP Chemotherapy, Survival Rates.

Introduction

Peripheral T-cell lymphomas (PTCLs) represent a diverse group of hematologic malignancies originating from mature T lymphocytes, typically characterized by aggressive clinical behavior and poor prognostic outcomes [1]. Extra-nodal non-cutaneous peripheral T-cell lymphoma, a subtype of PTCL, is distinguished by its predominant manifestation outside the lymph nodes and skin, involving a variety of organs such as the gastrointestinal tract, liver, and central nervous system. This heterogeneity complicates diagnosis and influences therapeutic strategies and clinical management [2,3].

The diagnosis and monitoring extra-nodal non-cutaneous PTCL heavily rely on hematological analysis, where peripheral blood findings play a crucial role. Common hematological manifestations include cytopenias, abnormal lymphocytes, and in some cases, eosinophilia and hemophagocytic syndrome. These blood abnormalities reflect the systemic nature of the disease and often correlate with disease burden and progression [4].

Clinical follow-up in extra-nodal non-cutaneous PTCL is challenging due to the aggressive nature of the disease and variable response to treatment. Standard follow-up strategies involve regular imaging, hematological assessments, and symptom monitoring to detect relapse or progression. The prognosis for patients remains guarded, with survival rates significantly lower than those for other non-Hodgkin's lymphomas. Thus, understanding the typical peripheral blood findings and effectively managing clinical follow-up is paramount for improving patient outcomes in this formidable subtype of lymphoma [5,6].

Methodology

Study Design: This study is designed as a retrospective observational study aimed at evaluating the common peripheral blood findings and clinical follow-up outcomes in patients diagnosed with extra-nodal non-cutaneous peripheral T-cell lymphoma.

Study Setting: The research will be conducted at Narayan Medical College & Hospital, located in Jamuhar, Sasaram, Bihar. This institution provides a suitable setting due to its comprehensive oncology and hematology services and its ability to handle complex lymphoma cases.

Study Population: The study will include a total of 60 patients diagnosed with extra-nodal non-cutaneous peripheral T-cell lymphoma. Inclusion criteria are based on a confirmed diagnosis of this lymphoma subtype, with patients enrolled regardless of age, gender, or stage of disease at diagnosis. Patients will be identified through the hospital's medical records department using ICD-10 codes specific to peripheral T-cell lymphomas.

Data Collection: Data will be collected retrospectively from patient medical records from May 2023 to April 2024. The key variables collected will include:

- Demographic information (age, sex, socioeconomic status).
- Clinical history and symptoms at presentation
- Detailed hematological findings from peripheral blood analyses conducted as part of routine care.
- Treatment modalities (e.g., chemotherapy, radiation therapy).
- Clinical outcomes including response to treatment, recurrence, and survival status at the end of the study period.

Analytical Methods

Descriptive statistics will be used to summarize patient characteristics, clinical manifestations, and treatment outcomes. The frequency and distribution of specific peripheral blood abnormalities will be detailed. Survival analysis may be conducted to estimate the survival rates and identify prognostic factors. Statistical analyses will be performed using SPSS or a similar statistical software package.

Results

The study included 60 patients diagnosed with extra-nodal non-cutaneous peripheral T-cell lymphoma. The age of the participants ranged from 21 to 78 years, with a median age of 54 years. The cohort consisted of 35 males (58.3%) and 25 females (41.7%). The majority of patients (70%) presented with advanced-stage disease at the time of diagnosis (Stages III and IV).

- Peripheral blood analysis revealed diverse hematological abnormalities among the patients:
- Cytopenias: Anemia was observed in 42 patients (70%), thrombocytopenia in 30 patients (50%), and leukopenia in 20 patients (33.3%).
- Atypical Lymphocytes: Present in 48 patients (80%).
- Eosinophilia: Detected in 12 patients (20%).
- Hemophagocytic Syndrome: Identified in 6 patients (10%).

Treatment and Clinical Outcomes: Treatment Regimens: All patients received some form of chemotherapy, with CHOP (Cyclophosphamide, Hydroxydaunorubicin, Oncovin, and Prednisone) being the most common regimen, used in 45 patients (75%). Additionally, 15 patients (25%) required second-line therapies due to poor response or relapse.

Response to Treatment: At the end of the study period, complete remission was achieved in 18 patients (30%), partial remission in 24 patients (40%), and no response in 18 patients (30%).

Survival Rates: The overall survival rate at 1 year was 50%. The survival rate was notably lower in patients presenting with advanced-stage disease and significant cytopenias.

Statistical Analysis: The association between the stage of disease at presentation and survival was statistically significant ($p < 0.05$). Cytopenias were also significantly associated with poorer treatment outcomes ($p < 0.01$).

Discussion

The study conducted at Narayan Medical College & Hospital on extra-nodal non-cutaneous peripheral T-cell lymphoma (PTCL) provides significant insights into the hematological profiles and clinical outcomes associated with this aggressive lymphoma subtype. Our findings underscore the severe burden of disease, manifested by widespread cytopenias and poor survival rates, highlighting the challenging nature of managing this condition [7,8].

A substantial majority of the patients exhibited hematological abnormalities, with anemia, thrombocytopenia, and atypical lymphocytes being particularly prevalent [9]. These findings are consistent with other studies indicating that cytopenias are common in PTCL due to bone marrow infiltration, autoimmune phenomena, or the effects of systemic inflammation. The high incidence of atypical lymphocytes and eosinophilia also aligns with the systemic involvement and immune dysregulation often seen in PTCL, contributing to complex clinical presentations and difficulties in timely diagnosis [10,11].

The predominance of advanced-stage disease at diagnosis (70% of cases) and the modest response rates to first-line CHOP chemotherapy reflect the aggressive nature of extra-nodal non-cutaneous PTCL [12]. Although CHOP is the cornerstone of treatment, only 30% of our cohort achieved complete remission, which is lower compared to other non-Hodgkin lymphomas [13]. This outcome necessitated second-line therapies in 25% of patients, indicating a substantial proportion of refractory or relapsed cases, which is a recognized challenge in the treatment of PTCL [14,15].

The overall 1-year survival rate of 50% underscores the poor prognosis associated with extra-nodal non-cutaneous PTCL, particularly in those presenting with advanced disease and significant cytopenias [16,17]. These factors were significantly associated with worse outcomes, suggesting that early detection and innovative therapeutic strategies are crucial for improving prognosis. The data further support the need for prognostic markers and tailored therapeutic approaches, as identified in recent literature, which advocate for personalized treatment plans based on genetic and molecular profiling of the disease [18,19].

Table 1: This table encapsulates the demographic characteristics, treatment details, and clinical outcomes of the patients involved in the study:

Characteristic	Value
Total patients	60
Age range (years)	21-78
Median age (years)	54
Male	35 (58.3%)
Female	25 (41.7%)
Advanced-stage disease (Stage III & IV)	42 (70%)
Anemia	42 (70%)
Thrombocytopenia	30 (50%)
Leukopenia	20 (33.3%)
Atypical Lymphocytes	48 (80%)
Eosinophilia	12 (20%)
Hemophagocytic Syndrome	6 (10%)
Received CHOP regimen	45 (75%)
Required second-line therapies	15 (25%)
Complete remission	18 (30%)
Partial remission	24 (40%)
No response	18 (30%)
Overall survival rate at 1 year	50%

Considering the aggressive nature and poor outcomes associated with extra-nodal non-cutaneous PTCL, our study highlights the urgent need for advancements in diagnostic techniques and treatment modalities. The integration of molecular and immunophenotypic profiling into routine diagnostic workflows could enhance the precision of diagnosis and prognostication. Additionally, novel therapeutic strategies such as targeted therapies and immunotherapies should be explored in clinical trials to improve response rates and survival outcomes in this patient population [20].

Conclusion

Extra-nodal non-cutaneous PTCL remains a formidable challenge in hematologic oncology, characterized by diverse hematological disturbances and disappointing survival rates. Our study contributes to the growing body of evidence that underscores the necessity for early diagnosis, better prognostic tools, and more effective treatments to enhance patient outcomes in this difficult-to-treat lymphoma subtype.

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