Research Article

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Viremia Association with Lymphoproliferative Disorders

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ABSTRACT

Lymphocytes are a subset of white blood cells (WBC) that forms a framework of the immune system. They facilitate humoral and cellular immunity of the body against foreign proteins and pathogens. An increase in circulating lymphocytes (lymphocytosis) can be seen following infections such as infectious mononucleosis and pertussis, or in lymphoproliferative disorders. Lymphoproliferative disorders (LPD) are known complication of primary immunodeficiency (PID).

Viruses can cause number of primary infections that leads to different complications and induces malignancies. Primary infections in infants and children are common and usually asymptomatic. Outcome of LPD is very poor. Mortality rate is approximately 75%.

Keywords
Lymphoproliferative disorders, Malignancies, Viral infection, Immunodeficiency.

Objective

To study the prevalence of lymphoproliferative blood disorders in people already influenced with viral infections in different populations of Asia (Pakistan & Nepal).

Introduction

The LPD is described by polyclonal, polymorphic B-cell content with no confirmation of cell atypia, putrefaction or conspicuous mitotic action however with dominatingly additional nodal systemic and noticeable pneumonic association. Physical findings of LPDs usually are incorporate adenopathy, splenomegaly, or manifestations inferable from organ infiltration by the abnormal lymphoid cells [1]. Patient may experience fatigue, weakness (due to anemia), fever and bleeding (petechial hemorrhages, ecchymosis, epistaxis and gums bleeding).

Roughly, 12% of all cancers worldwide are associated with viral infections. Including HIV, Epstein-Barr virus (EBV), Hepatitis B and C viruses, and Human papilloma virus, but HIV can create a more permissive environment for cancer development through

immune inhibition [2].

EBV is the source of infection in approximately 90% of the aggregate people and causes aggressive lymphomas in individuals with acquired and innate immune disorders and is strongly related with diffuse large B-cell lymphomas, classical Hodgkin lymphoma, Burkitt lymphoma, and nasopharyngeal carcinoma (NPC) [3].

Viral infections is an exceptionally common cause of LPD. In children, the most widely recognized is accepted to be congenital HIV infection because it is highly related to acquire immunodeficiency, which leads to LPD [4]. EBV has been involved in the development of extensive variety of B-cell lymphoproliferative blood disorders, including Burkitt's lymphoma, classic Hodgkin's lymphoma, and lymphomas emerging in immunocompromised individuals (post-transplant and HIV-associated lymphoproliferative disorders). T-cell lymphoproliferative blood disorders that have been accounted for to be EBV related include a subset of peripheral T-cell lymphomas, angioimmunoblastic T-cell lymphoma, extranodal nasal type natural killer/T-cell lymphoma, and other rare histotypes. EBV encodes a series of products interacting with or exhibiting homology to a wide variety of antiapoptotic molecules, cytokines, and signal transducers, hence promoting EBV infection, immortalization, and transformation [5].

Materials & Methods

This retrospective study was conducted from January 2015-March 2017 in tertiary care hospitals of Pakistan & Nepal. Sample size is 375. Patients of age 8 to 70 years were selected in this study. History and examination form designed particularly for the study from application "FORMS" was filled by concerned doctors.

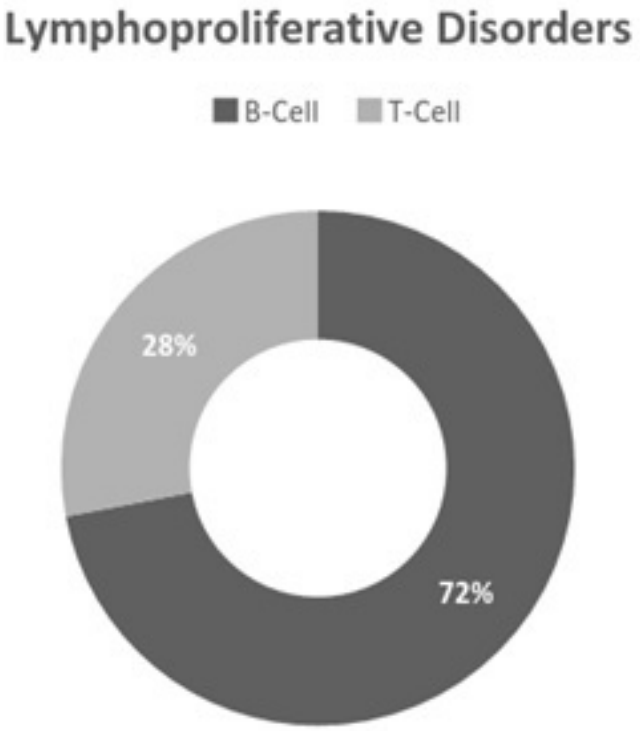
Patients, regardless of gender, presenting with various lymphoproliferative disorders coming to haematology and oncology departments were included in the study. Subjects with any metabolic disorder and the individuals who did not consent to give information and blood sample for the study were excluded. At first a complete medical history was taken and a complete physical examination carried out. Serologic tests for viruses were performed with the measure of ESR. Finally, after total assessment and suitable medications (if needed), and after gathering and classifying initial data, we used SPSS software version 16 for statistical analysis. T-test, Chi-Square statistical tests were done. Continuous data was mentioned as mean ± SD and categorical data as proportions. P-values less than 0.05 were considered statistically significant. According to the fact that all reviews and treatments were depended on patient's needs and avoided any unnecessary examinations and their personal information won't be obtained by any factual or legal authorities, this research does not have any ethical problems.

Results

Sum of patients who had lymphoproliferative disorder were 355. Male female ratio was 4:1. Out of 375 patients, 270 patients were affected with B-cell lymphoma while 105 with T-cell. 230 were infected with different viruses previously and 145 were not.

The results are summarized in following table and chart.

AGE	Hep B	Hep C	EBV	HIV	HPV	CMV	H.Influ
8-12 y	4	-	12	9	2	5	1
13-19 y	15	-	15	-	-	2	14
20-40 y	13	1	27	14	12	4	7
50-70 y	11	2	13	11	7	1	13



Conclusion

As indicated by age, children with 8-12 years of age were affected with all viruses. EBV is most prevalent while HPV is least. In teenagers Hep B, EBV and H. Influenza are found mainly. In adults, all the previously mentioned viruses were found, EBV predominantly. EBV prevalence was found to be highest in patients with lymphoproliferative disorders in every age group showing strong association, while Hepatitis C was least suggesting almost no relation with lymphoproliferative disorders in our population.

In old patients, invulnerability related with maturity and environmental factors may provoke the development of peripheral T cell lymphoma, unspecified, and diffuse large B cell lymphoma.6

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