Relationship of D dimer with the prognostic markers of Diffuse Large B Cell Lymphoma and classical Hodgkin Lymphoma

Abstract

Background

Diffuse large B cell lymphoma (DLBCL) is by far the most common non Hodgkin lymphoma ( NHL) , representing 35–40% of all newly diagnosed NHL and more than 80% of aggressive lymphomas. The selection of appropriate treatment depends on accurate staging of the extent of disease which can be done by the use of Ann Arbor staging system. The International Prognostic Index (IPI) is used for predicting the clinical outcomes of patients with DLBCL. It is based on age, serum lactate dehydrogenase (LDH) level, performance status, Ann-Arbor stage, and number of extra-nodal lesions. Hodgkin lymphoma (HL) is a clinicopathologically unique, aggressive B-cell lymphoma, which is one of the most curable of all haematological malignancies. Ann Arbor system is also used for HL staging while the Hasenclever score for HL is based on albumin, haemoglobin, sex, age, stage of the disease, leucocyte count and lymphocyte count). D-dimer, is a fibrin degradation product, a small protein fragment present in the blood after a blood clot is degraded by fibrinolysis. D-dimer concentration may be determined by a blood test to help diagnose thrombosis. Since its introduction in the 1990s, it has become an important test performed in patients with suspected thrombotic disorders. It has been reported that elevated D-dimer levels might be also detected in several kinds of malignancies. However, the prognostic value of D-dimer in tumor cases is still controversial and the mechanism of D-dimer in tumor progression. It has been reported that D-dimer may promote cancer cell proliferation, adhesion, angiogenesis, and may lead to the growth of malignant tumors. The medical effects and prognostic role of plasma D-dimer in DLBCL and HL have not yet been established .

Aim of study

To Assess the reliability fo D dimer level in relation to each type of lymphoma in concordance with Clinical presentations , standard Prognostic markers as well as early outcomes.

Patients and Method

A prospective cohort study among 50 adult patients, 25 of them newly diagnosed with Diffuse Large B Cell Lymphoma (DLBCL) and 25 with classical Hodgkin's lymphoma (HL) enrolled for period between December 2019 and December 2020 from different hematology centers. the diagnosis is confirmed by LN or BM biopsy with immune histochemistry.For each patient demographic data collected and clincal presentation, staging as well as IPI score for DLBCL and Hasenclever for HL. Inclusion criteria: newly diagnosis before treatment or within 1st course and both groups receiving same regimen R CHOP for DLBCL and ABVD for HL.

Exclusion criteria : relapsed cases, Active infection, known congenital thrombophilia, thromboembolic event within 3 months, An underlying inflammatory bowel disease, connective tissue disease, stroke, Endocarditis, Active peptic ulcer, Severe untreated hypertension, neurosurgery within 6 months, pregnancy even if it is within the prior 6 months, anticoagulant treatment.

D dimer assay principle combines a two step enzyme immunoassay sandwich method with a final fluorescent detection (ELFA).this test done at a private Medical Specialized laboratory Then subsequently D-dimer level had assessed in relation to IPI score for DLBCL and Hasenclever for classical HL.

Results

In regard to DLBCL the mean age of patients is approximately in the fifth decade with male more than female, Most patients are stage 2 and 3 with no extra-nodal and ECOG scores 0 , however B symptoms are still reported in two third of the patients, Mean LDH and D dimer were 409.24 and 1428.92 respectively , most patients were of low and intermediate risk group and more than half of them are responded to treatment, There was significant association and strong relationships appeared for the age, ECOG , B symptoms, stage and LDH with the D dimer level , apart from extranodal involvement. While in HL The mean age of patients is approximately in the third decade with slightly higher incidence among male than female, Most patients are stage 2 & 3 while most common stage is stage 4 and B symptoms are still reported in two third of the patients, Mean albumin, hemoglobin, WBC, lymphocyte and D dimer were 3.7, 10.86, 11.35, 1.7 (11.8%) and 1568.9 respectively and most common IPI scores are 4, 1 and 2 respectively . More than two third of patients are responded to treatment, There were significant association and strong relationships appeared for the stages and albumin with the D dimer level , while there was no significant relationship or association with age, gender, wbc, lymphocyte and haemoglobin levels.

Conclusions:

1. In both DLBCL and HL, D dimer showed statistically association with the outcome in term of response.

2. In DLBCL both D dimer and LDH showed significant association as univariate predictor to prognosis, while, in HL Only D dimer showed significant association as univariate predictor to prognosis.

3. In both DLBCL and HL D dimer had better prognostic utility than that of the IPI score.