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Research Paper

A Review of Hodgkin and Non Hodgkin Lymphoma

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ABSTRACT:- Background: *Lymphoma is a group of blood cell tumours which arise from the lymphatic cells. Lymphoma has many subtypes but the two main categories of lymphoma are Hodgkin lymphoma and non-Hodgkin lymphoma. It was first described by Thomas Hodgkin in 1832 after whom the disease was named[1]. Lymphoma is the most common hematologic malignancy and accounts for 55.6% of blood cancers in the United States and 5.3% of all cancers[2]. Hodgkin lymphoma accounts for less than 1% of all cancers in the United States.Lymphoma is the third most common cancer found in children[3]. In 2012 it accounted for 305,000 deaths worldwide[4]. Lymphomas are more commonly found in developed parts of the world. Hodgkin lymphoma is associated with prior Epstein-Bar infection, whereas the risk factors associated with non-Hodgkin lymphoma are HIV, immunosuppression and other autoimmune conditions. Lymphoma is usually diagnosed by lymph node biopsy. Staging is then done by radiologic imaging studies to detect disease extent and appropriate therapy is accordingly initiated. Common organs of metastasis are liver, lungs and brain. Management of lymphoma usually involves chemotherapy, radiation therapy, surgery or a combination of the aforementioned techniques. The 5 year survival rate for lymphoma is 85% in the United States.*

Keywords: *Lymphoma, Hodgkin Lymphoma, Non Hodgkin Lymphoma*

I. INTRODUCTION

Individuals with lymphoma can sometimes be asymptomatic or present with nonspecific symptoms. Some of the symptoms of lymphoma are lymphadenopathy and B symptoms (systemic symptoms which consist of weight loss, night sweats and fever). Other nonspecific symptoms include dyspnea, fatigue and anorexia. Classification is usually based on whether it is Hodgkin or non-Hodgkin lymphoma, whether it is a B-cell or T-cell lymphoma and the location from where the lymphoma first developed.

Hodgkin Lymphoma

Hodgkin lymphoma has a bimodal distribution-young adulthood (15-30) and in those over 55 years of age[5]. It is more common in men (except for the nodular sclerosing type). It accounted for 18000 deaths in the year 2010[6]. There is an increased incidence in those with HIV infection. An infection by the Epstein-Barr virus (which causes infectious mononucleosis) can increase the risk of developing Hodgkin lymphoma. There are 4 subtypes of Hodgkin lymphoma: Lymphocyte-rich, lymphocyte depleted,mixed-cellularity subtype and nodular sclerosing Hodgkin lymphoma. This classification is made on the basis of the Reed-Steinberg morphology which is a bilobed,tumour giant cell characteristic of Hodgkin lymphoma. The nodular sclerosing form has the best prognosis while the lymphocyte depleted has a poor prognosis. The symptoms can include painless enlargement of the lymph nodes in the neck, groin or axilla, pruritis, night sweats, fever, weight loss (B symptoms), hepatosplenomegaly and back pain. Definitive diagnosis is made by excisional biopsy. After the diagnosis is made, staging is done which will dictate the treatment plan. The staging is as follows: Stage I – single lymph node group involvement, Stage II – Two or more lymph node groups on one side of the diaphragm, Stage III – lymph node involvement on both sides of the diaphragm and Stage IV – Widespread disease (liver, bone marrow or extra-nodal involvement). Stages I/II without 'B' symptoms are treated with lower dose chemotherapy and radiation. Stages III/IV is treated with higher dose chemotherapy exclusively. CT scans with contrast, PET scans, chest x-ray and bone marrow biopsy are used to assist in staging. Stages III/IV and those with B symptoms are treated with the ABVD regimen (Adriamycin {doxorubicin}, bleomycin, vinblastine and dacarbazine). Prognosis can range from >90% cure rate to 50-60% in those with advanced stage disease. Prognosis is related to the number of involved sites. The presence of B symptoms or systemic symptoms is a negative prognostic factor. Follow up management should include knowing the long term adverse effects of treatment such as peripheral neuropathy (vincristine), pulmonary fibrosis (bleomycin),

cardiomyopathy (Adriamycin/doxorubicin) and infertility (chemotherapy). Radiation therapy can cause thyroid disease, breast cancer,lung cancer as well as accelerate coronary artery disease and valvularabnormalities. Another long term concern is the development of secondary malignancies such as acute myeloid leukemia and other solid tumours. These appear to be treatment related especially in those undergoing combination chemotherapy/radiation therapies.

Non-Hodgkin Lymphoma

All types of lymphoma excluding Hodgkin lymphoma are classified as non-Hodgkin lymphoma (NHL). They can vary in severity from slow growing to extremely aggressive types. The 5-year survival rate for NHL in the United States is 69%[7]. In 2010 there were 210,000 deaths from NHL across the world[8]. 2.1 percent of all males and females are diagnosed with NHL[9]. NHL is more common in males than females and its incidence steadily increases with age[10]. Some of the associations with NHL are Epstein-Barr virus, helicobacter pylori, Human T-cell leukemia virus, hepatitis C virus, HHV-8, HIV, chemicals (phenoxy herbicides, diphenylhydantoin, dioxin, polychlorinated biphenyls), radiation therapy, chemotherapy, autoimmune diseases (systemic lupus erythematosus, Sjögren's syndrome, celiac sprue, rheumatoid arthritis) and certain genetic diseases (Chédiak-Higashi syndrome, Klinefelter's syndrome). NHL can be further sub-classified as neoplasms of mature B-cells and neoplasms of mature T-cells. Some of the B-cell lymphomas are:

1) Burkitt's lymphoma: Occurs in adolescents or young adults. Associated with EBV and can presents with jaw lesion. Endemic in Africa.
2) Diffuse large B-cell lymphoma: Occurs in older adults (though 20% occur in children). Most common form of NHL. Can be T-cell in origin
3) Mantle cell lymphoma: Occurs in older males. Has a poor prognosis.
4) Follicular lymphoma: Occurs in adults. Has an indolent course and is difficult to cure

Some of the T-cell lymphomas are:

1) Adult T-cell lymphoma: Occurs in adults. Is caused by Human T-cell leukemia virus (HTLV). Presents with cutaneous lesions. Aggressive form of NHL. More common in West Africa, Japan and the Caribbean.
2) Mycosis Fungoides/Sezary syndrome: Occurs in adults. Presents with cutaneous patches/nodules. Has an indolent course.

NHL more often presents with a widespread disease. It may not present with the classical B symptoms such as in Hodgkin lymphoma. Diagnosis and staging are the same as those mentioned above for Hodgkin lymphoma. Treatment for Stage I/II is done with radiation and lower dose chemotherapy as was done in Hodgkin lymphoma. For stages III/IV the CHOP regimen is given which consists of cyclophosphamide, hydroxyadriamycin, onconvin (vincristine) and prednisone. Rituximab can be added if anti-CD20 antigen is presentand will improve the treatment outcome.The adverse effects of this regimen are hemorrhagic cystitis (cyclophosphamide – can be prevented with mesna) and peripheral neuropathy (vincristine).

HODGKIN LYMPHOMA	**NON-HODGKIN LYMPHOMA**
Single group of nodes, localized, contiguous spread.	Multiple, extra-nodal involvement usually, non-contiguous spread.
Reed-Steinberg cells present	Reed-Steinberg cell not present.
Bimodal distribution – 15-30 years and >55 years.	Incidence increases with age.
Associated with EBV	Associated with HIV and immunosuppression
B symptoms (fever, night sweats, weight loss) more commonly seen.	Constitutional signs/symptoms rarely seen.

II. CONCLUSION

80-90% of Hodgkin lymphoma presents with Stage I/II while 80-90% of non-Hodgkin lymphoma present with stage III/IV. Palliative care can accompany treatment regimens for those suffering from advanced stage lymphoma. It focuses on pain, stress, direct symptoms of lymphoma and side effects from medications or radiation therapy. It is especially helpful in children who develop lymphoma to help them and their families cope with the emotional and physical stresses of the disease.

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