

Difference Between Myeloma and Lymphoma

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Key Difference – Myeloma vs Lymphoma

Myeloma and Lymphoma are two inter-related malignancies having a lymphoid origin. **Myelomas typically occur in the bone marrow whereas lymphomas can arise in any site of the body where lymphoid tissues are available.** This is the key difference between myeloma and lymphoma. The specific etiology of these diseases is unknown but certain viruses, irradiation, immune suppression and cytotoxic poisons are believed to have some influence on the malignant transformation of the cells that leads to these malignancies.

What is Lymphoma?

Malignancies of the lymphoid system are called lymphomas. As previously mentioned, they can arise at any site where lymphoid tissues are present. It is the 5th most common malignancy in the Western world. The overall incidence of lymphoma is 15-20 per 100000. Peripheral lymphadenopathy is the commonest symptom. However, in about 20% of the cases, lymphadenopathy of the primary extra nodal sites is observed. In a minority of patients, lymphoma associated B symptoms such as weight loss, fever, and sweats may appear. According to WHO classification, lymphomas can be divided into two categories as Hodgkin's and Non-Hodgkin's lymphomas.

Hodgkin's Lymphoma

The incidence of Hodgkin's lymphomas is 3 per 100000 in the Western world. This broad category can be sub classified into smaller groups as Classical HL and Nodular Lymphocyte predominant HL. In Classical HL, which accounts for 90-95% of cases, the hallmark feature is the Reed-Sternberg cell. In Nodular Lymphocyte Predominant HL, "popcorn cell", a variant of the Reed-Sternberg can be observed under the microscope.

Etiology

Epstein-Barr Virus DNA has been found in tissues from patients with Hodgkin's lymphoma.

Clinical Features

Painless cervical lymphadenopathy is the commonest presentation of HL. These [tumors](#) are rubbery on examination. A small proportion of patients may present with a [cough](#) due to the mediastinal lymphadenopathy. Some may develop pruritus and alcohol-related pain at the site of lymphadenopathy.

Investigations

- Chest X-ray for mediastinal widening
- CT scan of chest, abdomen, pelvis, neck
- PET scan
- Bone marrow biopsy
- Blood counts

Management

The recent advances in the medical sciences have improved the prognosis of this condition. Treatment in the early stage of the disease includes 2-4 cycles of doxorubicin, bleomycin, vinblastine and dacarbazine, non-sterilizing, followed by irradiation, which has shown more than 90% cure rate.

Advanced disease can be treated with 6-8 cycles of doxorubicin, bleomycin, vinblastine, and dacarbazine along with chemotherapy.

Non-Hodgkin's Lymphoma

According to WHO classification, 80% of Non-Hodgkin's lymphomas are of B-cell origin and the others are of T-cell origin.

Etiology

- Family history
- Human T-cell Leukemia Virus type-1
- *Helicobacter pylori*
- *Chlamydia psittaci*
- EBV
- Immunosuppressant drugs and infections

Pathogenesis

During different stages of lymphocyte development, malignant clonal expansion of lymphocytes can happen, giving rise to different forms of lymphomas. Errors in the class switching or gene recombination for [immunoglobulin](#) and T cell receptors are the precursor lesions that later progress into malignant transformations.

Types of NHL

- Follicular
- Lymphoplasmacytic
- Mantle cell
- Diffuse large B cell
- Burkitt's
- Anaplastic

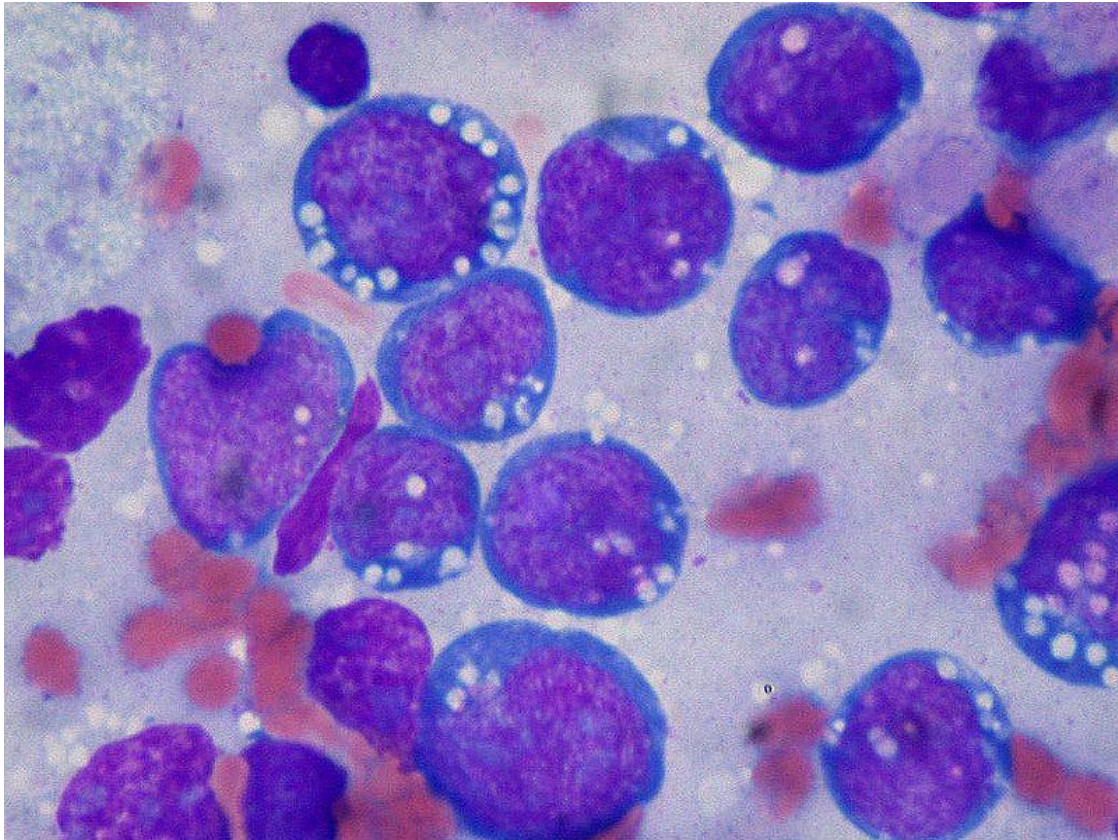


Figure 01: Burkitt lymphoma, touch prep

Clinical Features

The commonest clinical presentation is painless lymphadenopathy or symptoms that occur due to the mechanical disturbances by the lymph node mass.

What is Myeloma?

The malignancies arising from the plasma cells in the bone marrows are called myelomas. This disease is associated with the excessive proliferation of plasma cells, resulting in an over production of monoclonal paraproteins, mainly IgG. Excretion of light chains in urine (Bence Jones proteins) can occur in paraproteinaemia. Myelomas are commonly seen among elderly males.

Cytogenetic abnormalities have been identified by FISH and microarray techniques in most cases of myeloma. Bone lytic lesions can be typically seen in the spine, skull, long bones and ribs due to dysregulation of bone remodeling. The osteoclastic activity is increased with no increment in the osteoblastic activity.

Clinicopathological Features

Bone destruction can cause vertebral collapse or fracture of long bones and hypercalcemia. Spinal cord compressions can be caused by soft tissue plasmacytomas. Bone marrow infiltration with plasma cells may result in [anemia](#), neutropenia, and thrombocytopenia. Kidney injury can be caused by multiple reasons such as secondary hypercalcemia or hyperuricemia, use of NSAIDs and secondary amyloidosis.

Symptoms

- Symptoms of anemia
- Recurrent infections
- Symptoms of renal failure
- Bone pain
- Symptoms of hypercalcemia

Investigations

- Full blood count- Hemoglobin, white cells and platelet counts are normal or low
- ESR (Erythrocyte Sedimentation Rate)-usually high
- Blood film
- Urea and electrolytes
- Serum calcium-normal or elevated
- Total protein levels

- Serum protein electrophoresis-characteristically shows a monoclonal band
- Skeletal survey-characteristic lytic lesions can be seen

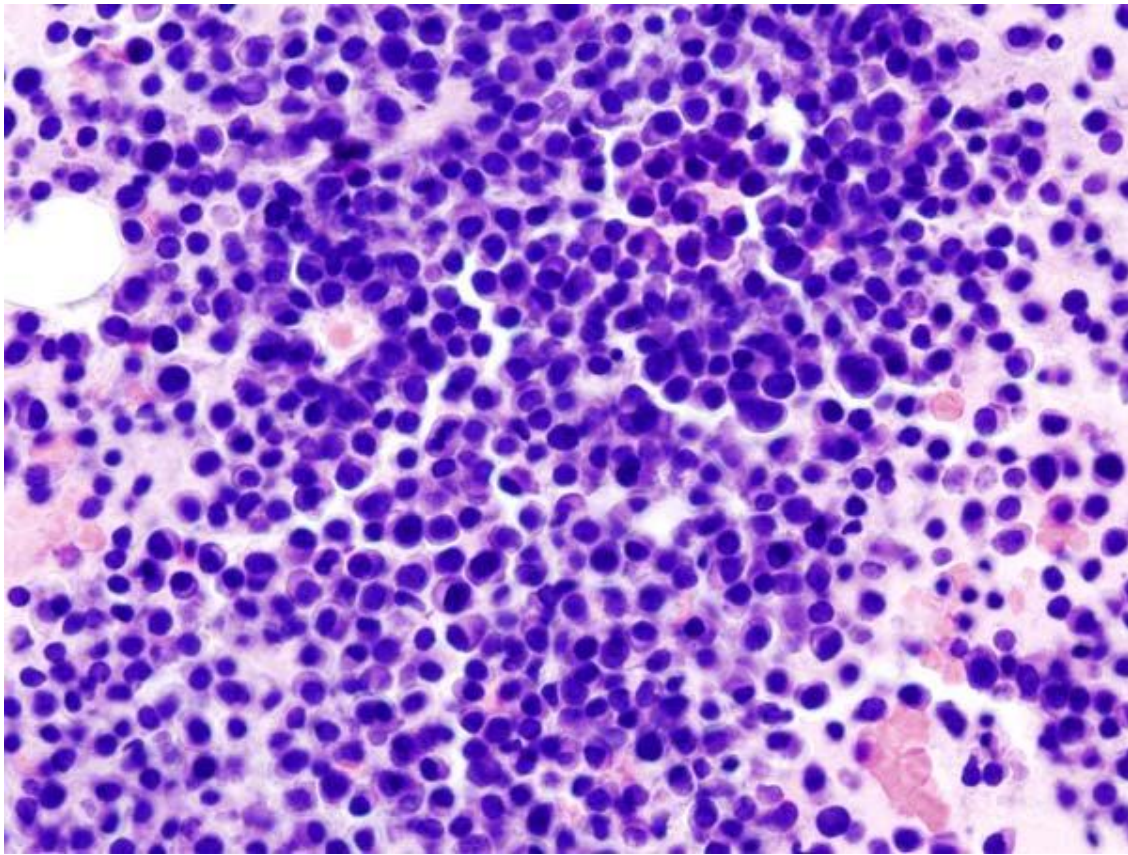


Figure 02: Histopathological image of multiple myeloma

Management

Although the life expectancy of myeloma patients has been improved by about five years with good supportive care and chemotherapy, there is still no definitive cure for this condition. The therapy is aimed at prevention of further complications and prolongation of survival.

Supportive Therapy

Anemia can be corrected with blood transfusion. In patients with hyperviscosity, transfusion should be done slowly. Erythropoietin can be used. Hypercalcemia, kidney injury and hyperviscosity should be treated appropriately. Infections can be treated with antibiotics. Yearly vaccinations can be given if necessary. Bone pain can be reduced by radiotherapy and systemic chemotherapy or high-dose dexamethasone. Pathological fractures can be prevented by orthopedic surgery.

Specific Therapy

- Chemotherapy-Thalidomide/Lenalidomide/bortezomib/steroids/Melphalan
- Autologous bone marrow transplant
- Radiotherapy

What is the difference between Myeloma and Lymphoma?

Myeloma vs Lymphoma

Malignancies of the lymphoid system are called lymphomas.

The malignancies arising from the plasma cells in the bone marrows are called myelomas.

Commonness

Lymphoma is commoner than myelomas.

Myeloma is less common.

Location

This can occur in any place where lymphoid tissues are present.

This usually arises in the bone marrow.

Summary – Myeloma and Lymphoma

Lymphomas are the malignancies of the lymphoid system while myelomas are the malignancies arising from the plasma cells in the bone marrows. This is the difference between myeloma and lymphoma. Since these diseases are fairly serious and life threatening-conditions, special attention should be given to the mentality of the patient during disease management. Support from the family should be gained in order to enhance the standards of living of the patient.

Reference:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009. Print.

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How to Cite this Article?

APA: Difference Between Myeloma and Lymphoma. (2017, August 4). Retrieved (date), from <http://www.differencebetween.com/difference-between-myeloma-and-vs-lymphoma/>

MLA: " Difference Between Myeloma and Lymphoma" Difference Between.Com. 4 August 2017. Web.

Chicago: " Difference Between Myeloma and Lymphoma." Difference Between.Com.<http://www.differencebetween.com/difference-between-myeloma-and-vs-lymphoma/> (accessed [date]).



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