CAUSES AND MANAGEMENT OF MULTIPLE MYELOMA

A SEMINAR PRESENTED

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SUMMARY

Multiple myeloma (MM) is a debilitating malignancy that is part of a spectrum of diseases ranging from a monoclonal gammopathy of unknown significance (MGUS), to plasma cell leukaemia. First described in 1848, MM is characterised by a proliferation of malignant plasma cell and a subsequent over abundance of monoclonal paraprotein (M Protein). Multiple myeloma is often diagnosed when a monoclonal protein is found in the serum or urine. No single test differentiates benign from malignant plasma cell proliferation. The clinical features of multiple myeloma develop from tissue damage secondary to the monoclonal gammopathy, plasma cell, and cytokines excreted by the cells. Increased vulnerability to infection is due to depressed normal immunoglobulin. The melphalan and prednisone regimen improves medial survival from 7months to 3years in the 50%-60% of patients who respond. Cure is exceedingly rare. Refractory and multiple myeloma patients should be treated on investigational protocols.

CAUSES AND MANAGEMENT OF MULTIPLE MYELOMA

Multiple myeloma is a blood cancer related to lymphoma and leukemia. Though it can't usually be cured, there are treatments that slow down it's spread. In multiple myeloma, a type of white blood cell called a plasma cell multiples unusually. Normally, they make antibodies that fight infections. But in multiple myeloma, they release too much protein (called immunoglobulin) into the bones and blood, it builds up throughout the body and causes organ damage

The plasma cells also crowd normal blood cells in the bones, they release chemicals that trigger other cells to dissolve bone, then the weak areas of the bone this creates are called lytic lesion. As multiple myeloma gets worse, those plasma cell begins to spill out of the bone marrow and spread through the body. In multiple myeloma, the plasma cells undergo what is referred to as malignant transformation and becomes cancerous. Multiple myeloma can't usually be cured but there are treatment that slows down its spread.

CAUSES

•Toxic chemicals

•Radiation

•Viruses

•Immune disorder

•Family history of the disease

SIGNS AND SYMPTOMS

Some myeloma patients may be present with weakness due to anaemia caused by inadequate production of red blood cells.

The following symptoms includes:

•Weakness/fatigue

•Anaemia

•Enlarged tongue (macroglossia)

•Infections

•Hypercalcemia (increased level of calcium in the blood)

•Skin lesion

•Loss of appetite and weight loss

•Bone pain including back pain

•Swollen legs

DIAGNOSIS AND TESTS

A. Blood tests

•**Serum protein electrophoresis(SPEP):** It measures immunoglobulin (antibodies) in the blood, this tests looks specifically for an abnormal high amount of an immunoglobulin known as M protein.

•**Complete blood count (CBC):** It measures the number of red blood cells, white blood cells and platelets. This tests tells if multiple is keeping someone from making enough blood cells and how far the count is.

B. Urine test

•**Urinalysis:** In urinalysis, it checks how well the kidney are working and tell if someone might have kidney damage using combi 9 test strips also known as proprietary reagents.

•**Urine protein:** The tests measures how much protein someone have using the following test methods:

❖ Boiling tests and sulphosalicylic acid tests

•**Urine protein electrophoresis (UPEP):** For this test collect a urine over 24hrs period and keep it cool, after the analysis have **been done, if the protein and what's known as Bence jonce** protein are in the urine, it indicates the presence of multiple myeloma

C. Bone tests: It indicate the structure, number and the size of tumors in the bones

•**X-rays:** known as bone survey or skeletal survey

•**MRI (magnetic resonance imaging):** powerful magnets and radio waves are used to make detailed images EXAMPLE: Thoracic and lumber spinal lessions

•**PET (POSTION EMISSION TOMOGRAPHY):** Radiation is used to make three dimensional images.

MANAGEMENT OF MULTIPLE MYELOMA-RELATED BONE DISEASE

In May 2013, the international myeloma working group (IMWG) released practice guidelines for the management of multiple myeloma-related disease. The recommendations, which were based on a review of the literature through august 2012 and a consensus of an interdisciplinary panel of experts, includes the following:

•Consideration of bisphosphonates in all patients receiving first line antimyeloma therapy.

•Intravenous (IV) zoledronic acid for preventing skeletal related events; because of it's effects and survival benefits.

•Low-dose radiation therapy can be used for palliation of uncontrolled pain, impending pathologic fracture, or spinal cord compression.

•Orthopedic consultation should be sought for long bone fractures, spinal cord compression, and vertebral column instability

TREATMENT

Treatment for multiple myeloma includes drugs that modulate the immune system, chemotherapy drug, radiation therapy, stem cell transplant

Other medical treatment include:

•Dexamethasone- Immune cell modulation

•Pamidronic acid- Inhibits bone resorption

•Bortezomib- Protease inhibitor

•Prednisone

•Steroids

•Bisphosphonate therapy

•Blood or platelet transfusions

PREVENTIONS

•Avoid smoking

•Maintaining body weight

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