**Multiple Myeloma**
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Section HE10

**Overview**

Multiple Myeloma is a hematologic malignancy. The main characteristic is the presence of abnormal clonal plasma cells within bone marrow. Uncontrolled plasma cell proliferation tends to occur in the bone marrow leading to failure and loss of functions, which eventually results in destructive bone lesions, anemia, hypercalcemia, and kidney problems. The majority of patients with this disease will have brittle and frail bones due to the constant break down of bone, also known as osteoporosis.

**Etiology**

The cause of Multiple Myeloma remains unknown; however, radiation may be a cause for some of the cases since radiation exposure can promote sarcomas and other malignancies.

**Clinical Presentation**

An x-ray would be optimal for narrowing down this type of disease. Radiographically, there will be a plethora of radiolucent lytic lesions visible on the bone. If the patient were to get a blood test there would probably be a lack of red blood cells, high levels of calcium, and excess protein, as a result. The patient may feel tired and weak due to anemia, constantly urinating because of kidney problems, and bone pain caused by osteoporosis.

**Demographic**

Multiple Myeloma accounts for 10-15% of all hematological malignancies. The condition is very rare with an incidence rate of 5 out of 100,000 per year. African Americans are affected twice as commonly as Caucasians and there is a predilection towards males over females. The median age for diagnosis is 65.

**Biopsy / Histology / Radiographs**

Because this disease arises from within bone marrow, a bone marrow biopsy would be the most appropriate. Bone marrow is aspirated from the patient and then examined/tested in a lab like any other biopsy. Histologically, we can expect there to be an abnormal amount of plasma cells on the slide, and only plasma cells. Radiographically, there will be multiple lytic lesions on the bones affected by this disease, mainly radiolucent. It will look as if the bones have eroded.

**Differential Diagnosis**

Some differential diagnosis multiple myelomas may be mistaken for are the following: Solitary Plasmacytoma, Waldenstrom Macroglobulinemia, POEMS syndrome, and Amyloid light chain (AL) Amyloidosis.

**Treatment**

There is no known cure for multiple myeloma, but there are certain medications, surgeries, and various therapies, that may improve one’s quality of life and control some of the problems caused by this disease. Bone marrow transplant or stem cell transplants allows for healthy bone marrow to replace the abnormal and diseased ones. Certain medications such as corticosteroids aids with the immune system and controls any inflammations in the body. Chemotherapy can specifically target the myeloma cells and temporarily restrict further proliferation of multiple myeloma.

**Prognosis**

Prognosis is good with treatment, specifically chemotherapy, with a median survival of 3-5 years. However, there are 3 stages for multiple myeloma. The lower the stage the longer the life expectancy, and the opposite can be said for the higher stages. Prognosis will be poor for a patient with a high ISS stage, regardless of treatment (chemotherapy).

**Professional Relevance**

This disease is important for me to know because as explained under prognosis, the earlier it is diagnosed the higher the chances of a 5-year life expectancy for the patient, with the right medication and treatment of course. Stage 1 is the most important stage for treatment because the disease can be controlled; however, this is also the stage where patients do not experience any of the severe symptoms caused by multiple myeloma, which is why by the time they are diagnosed, it is already in stage 2 or even 3. The information I learned from this will help me figure out what the cause may be and report it to the dentist or refer the patient to a specialist. If the patient is African American, male, around 65+ years of age, and complains of bone pain, fatigue, an urge to urinate, that already eliminates a lot of pathologies. On the x-rays, should I see any radiolucent lytic lesions as if they have been punched out in the skull, I can expect it to be the cause of multiple myeloma.

**Citations**

Bitelman VM, Lopes JA, Nogueira AB, Frassetto FP, Duarte-Neto AN. "Punched out" multiple myeloma lytic lesions in the skull. Autops Case Rep. 2017 Mar 30;6(1):7-9. doi: 10.4322/acr.2016.020. PMID: 27284535; PMCID: PMC4880428.

Fotiou D, Ntanasis-Stathopoulos I, Gavriatopoulou M, Dimopoulos MA, Multiple myeloma: Current and future management in the aging population,Maturitas,Volume 138, 2020, Pages 8-13, ISSN 0378-5122, <https://doi.org/10.1016/j.maturitas.2020.04.015>.

Firth J. Haematology: multiple myeloma. Clinical Medicine Jan 2019, 19 (1) 58-60; DOI: 10.7861/clinmedicine.19-1-58

Kazandjian D. Multiple myeloma epidemiology and survival: A unique malignancy. Semin Oncol. 2016 Dec;43(6):676-681. doi: 10.1053/j.seminoncol.2016.11.004. Epub 2016 Nov 10. PMID: 28061985; PMCID: PMC5283695.

Michels TC, Petersen KE. Multiple Myeloma: Diagnosis and Treatment. Am Fam Physician. 2017 Mar 15;95(6):373-383. PMID: 28318212.