AGGRESSIVE PLASMA CELL MYELOMA AS AN UNDERLYING CAUSE OF PARAPARESIS IN AN UNUSUALLY YOUNG MALE PATIENT

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Abstract

Plasma Cell Myeloma, also called multiple Myeloma, is a haematological malignancy characterised by the proliferation of malignant plasma cells with an associated monoclonal paraproteinemia. The disease is described to have a median age of diagnosis in the 7th decade of life and rare below the 4th decade. We report a case in which the patient was first diagnosed as having Multiple Myeloma at the age of 29 years. The patient had been having symptoms for at least 5 months prior to the diagnosis being arrived at. His earliest symptoms were non-specific: malaise, low grade fever, easy fatigability. These were followed by palpitations, recurring bipedal swelling, polyuria and two months later gnawing lower back pain. Shortly after, he experienced sudden inability to walk without support. The patient reported to us that he had visited a number of primary care facilities where he had full blood counts done as well as x-rays of the lumbosacral spine but was apparently told that apart from having moderate anaemia, his lumbo-sacral X-ray findings were not significant. At the last facility he visited before presenting to our hospital, he was told that he had severe anaemia due to chronic kidney disease. At presentation, a careful review of his history together with his laboratory investigations which included a FBC, blood film comment, BUE/Cr, and X- ray of the thoracolumbosacral spine was suggestive of Multiple Myeloma. Hence with his first blood film comment which showed mild rouleaux formation a bone marrow aspirate was requested. An ESR had not been done. The marrow showed plasma cell infiltration of 65%. Serum protein electrophoresis showed an M component of 8g/L while a serum free light chain assay revealed an increase of the lambda component of 8480 mg/L (normal: 5.71-26.30). A repeat x ray showed lytic lesions in the pelvic girdle, spine, shoulders and sternum. Patient was started on oral and intravenous hydration, renal dialysis, Zoledronic acid, chemotherapy with Vincristine, Adriamycin, Dexamethasone and Thalidomide, physiotherapy and thoracolumbar bracing. Patient responded well to treatment.

Key Words: Plasma Cell Myeloma, Young African Male, Aggressive

INTRODUCTION

Plasma cell myeloma is described as a disease of the older age brackets and is rare below the age of 30 years. A young patient presenting with anaemia, kidney disease, lower back pain with evidence of vertebral collapse may be considered to have other underlying causes such as Non Hodgkin Lymphoma, Disseminated Tuberculosis or even Renal Osteodystrophy rather than Plasma Cell Myeloma. This case of Plasma Cell Myeloma is being reported foremost because of its unusually aggressive presentation in a young African adult male and secondly, to highlight the need to consider plasma cell myeloma as a possible diagnosis even in young patients should their constellation of symptoms fit the picture.

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Case Report

The patient was a 29 year old male with a 5 month history of easy fatigability, gnawing back pain and non-traumatic sudden onset of inability to walk without support. His symptoms were preceded by malaise, low grade fever, polyuria, recurrent abdominal pain and bipedal swelling of at least two months duration. Patient had visited several primary care and secondary medical facilities prior to his inability to walk where investigations done including x rays of the lumbosacral spine were apparently unrevealing.

He was admitted at one of the several secondary care facilities after he lost his ability to walk for about two weeks and later referred to our hospital with a diagnosis of Chronic Kidney Disease. The patient reported that he was transfused a unit of blood while on admission at the last hospital before being referred. Information on his pre-transfusion haemoglobin concentration from the referral centre was not provided. There was no family history of haematological malignancy or any other neoplasm when his history was further probed. There was no history of exposure to radiation or industrial chemicals. He had no past hospital admissions prior to current illness and no known history of chronic medical illness. He was born to teenage parents who were separated.

On examination, he looked chronically ill with evidence of weight loss, pallor and mild dehydration. At the time, there was no pedal oedema. Chest examination revealed signs of consolidation in the left lower posterior lung base while the only significant cardiovascular finding was a displaced cardiac apex to the 7th left intercostal space in the midclavicular line. His abdomen was full and soft with mild epigastric tenderness but no organ enlargements. He had a gibus in the region of the 5th lumbar vertebra. Power was normal in the upper limbs but 4/5 in the lower limbs with normal reflexes, no sensory level and normal anal sphincter tone.

His lab results were as follows:

RBCs	1.53*	(3.8-4.8) 10^{12}/L
HB	5.1*	11-16g/dL
MCV	100.7	80-100 fL
MCHC	33.1	3-36g/dL
Platelet	144	(150-400) 10^9/L
WBC	9.76	(2.6-8.5) 10^9/L
Neutrophil	5.02	(1.5-7) 10^9/L
Lymphocytes	3.08	(1-3.7) 10^9/L
Monocytes	1.42	(0-0.7) 10^9/L
Creatinine	1147.2*	(53-123.8) umol/L
Urea	49.95*	(2.14-7.12)mmol/L
BUN/Cr	43.85	(8-36)
Albumin	43	34-50 g/L
Total protein	72.8	62-85 g/L
Globulin	29.78	20-48g/L
Total Bilirubin	20.19	3.4-25.70 umol/L
Direct Bilirubin	6.77	0.00-10.30 umol/L
Indirect Bilirubin	13.42	1.70-17.00 umol/L
AST	57.5	5.0-34 U/L
ALP	429.3*	53-270 U/L
ALT	50.5	10.0-50.0 U/L
GGT	179.1*	9.0-36.0 U/L

eGFR was 5.3 mL/min/1.73m2 (CKD-EPI)

Urine routine examination showed a pH of 6, protein of 2+, blood of 2+ and 7 RBC's

Total serum calcium was 2.47mmol/L (2.15-2.50)

X-ray showed multiple collapsed vertebrae and lytic bony lesions in the pelvic girdle (Image 1), thoraco-lumbar vertebrae, sacral vertebrae, shoulder girdle and sternum.

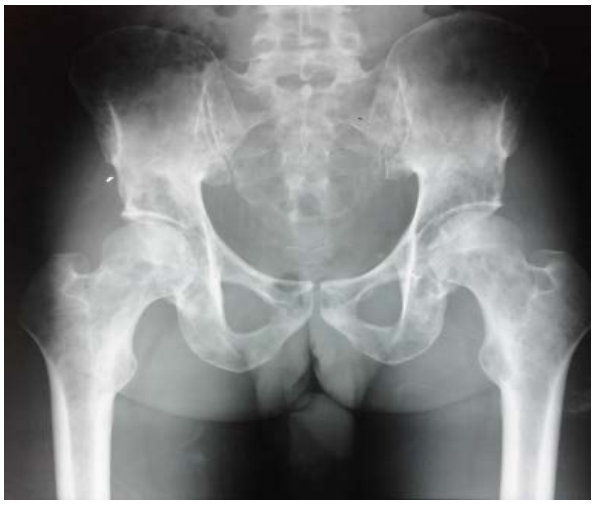

Image 1: Pelvic X Ray

Echocardiogram showed symmetric hypertrophy of both the right and left ventricles with good ejection fraction of >70% but a grade II left ventricular diastolic dysfunction and mild tricuspid regurgitation. Differentials of Renal Heart, Amyloid Heart and Symmetric Hypertrophic Cardiomyopathy were given.

Sputum for AFB as well as Gene Xpert for *Mycobacterium tuberculosis* was negative.

An initial blood film comment requested showed mild rouleaux (image 2) and relative neutrophilia with toxic granules.

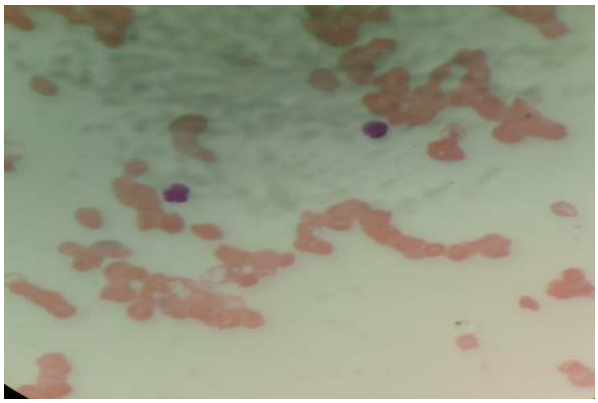

Image 2: Initial peripheral blood film with rouleaux

On the basis of a suggestive clinical picture supported by the above laboratory findings a work up to investigate for Plasma cell Myeloma was initiated which

included a bone marrow aspirate, serum protein electrophoresis, serum free light chains, serum beta microglobulin. Bone marrow aspirate done showed plasma cells in the bone marrow with a count of 65% (image 3).

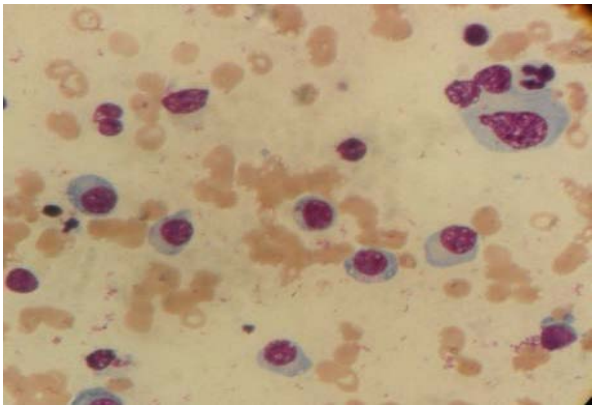

Image 3: Bone Marrow Aspirate

Plasma cells found in the peripheral blood film taken at the same time as the bone marrow aspirate was 13% of total WBC count.

Results for his serum protein electrophoresis, serum free light chain, serum beta 2 microglobulin and LDH are presented below:

Test	Result	Reference
S-Kappa Free Light Chain	52.90* mg/L	3.3-19.4
S-Lambda Free Light Chain	8480* mg/L	5.71-26.30
Kappa/Lambda Ratio	<0.01	0.26-1.65
Total Protein	79 g/L	64-83
S-Albumin	39 g/L	39.7-49.5
S-Alpha 1 Globulin	3.16 g/L	0.72-1.872
S-Alpha 2 Globulin	8.37 g/L	5.184-8.496
S-Beta 1 Globulin	4.27 g/L	4.032-6.552
S-Beta 2 Globulin	6.08 g/L	1.584-4.104
S-Gamma Globulin	5 g/L	4.464-11.088
S- 'M' Component	8 g/L	0
S- Beta 2 Micro-globulin	41 mg/L	<2.4
S-LDH	842 IU/L	120-240

Patient was started on hydration, renal dialysis, Zoledronic acid, physiotherapy and thoracolumbar brace. Definitive treatment with chemotherapy was initiated with Vincristine, Adriamycin, Dexamethasone and Thalidomide. Patient was scheduled to receive an initial 8 cycles of the treatment. Patient responded well to treatment initially but succumbed to sepsis from severe respiratory tract infection about 4 months later.

Discussion

Plasma cell myeloma is a disease consisting of systemic symptoms and signs resulting from the clonal proliferation of malignant plasma cells[1].

The median age of diagnosis is about 66 years for people of black African descent and 70 for people not of black African descent[2]. The disease has a low incidence below the age of 40 years and is even more rare below the age of 30 with a 0.3% frequency[3,4]. The median age at diagnosis is about 62 years for men and 61 for women[5].

The most common abnormalities found in at least two-thirds of patients at diagnosis are: evidence of monoclonal protein in serum, evidence of clonal plasma cells >10% in bone marrow, anaemia, bone involvement including pain and lytic lesions. Less frequent abnormalities are renal disease, light chain amyloidosis and hypercalcaemia[6]

Most reported case series have shown similar presentation of the disease at diagnosis as well as similar response to treatment among the various age groups[7]; however, a few other reports have described an indolent evolution of the disease in young male adults with a better survival despite poor response to therapy[8].

Our patient did not only have the typical presenting abnormalities but also the less frequent presenting abnormalities such as light chain amyloidosis evidenced by the cardiac amyloid disease (10%), and renal insufficiency (20%)[6]. It was also apparent that the clinical course of our patient's presentation was rather an aggressive one unlike what would be expected [8]. Our patient's symptoms evolved rapidly over a course of 5 months from general non-specific symptoms to the more elaborate constellation of vertebral collapse, kidney disease, symptomatic anaemia, cardiac amyloid and susceptibility to infections. At the time of diagnosis, the patient was staged III with the International Staging System.[6]

In tropical jurisdictions, several other competing diagnoses are likely to be the focus of diagnostic investigation with respect to the age of the patient and duration of onset of symptoms. Our patient for instance was investigated for at least malaria, urinary tract infection, and tuberculosis at various primary care facilities at the time the symptoms and signs were still evolving. By the time he was referred for tertiary medical care, he had developed significant anaemia, renal impairment and paraparesis from vertebral collapse.

We also considered among other possible underlying pathologies, the diagnoses of Non Hodgkin Lymphoma, Disseminated Tuberculosis and Hyperparathyroidism. However, when we had sufficient evidence that the patients presentation was not due to the other possible diagnoses, we considered the possibility of plasma cell myeloma despite the young age of the patient, because the constellation of signs and symptoms along with preliminary lab investigations including a blood film examination were suggestive of Myeloma.

Although the first peripheral blood film examined did not show any plasma cells, our index of suspicion for Multiple Myeloma was heightened due to the suggestive clinical presentation. A week later, when a repeat peripheral blood film together with bone marrow aspirate were examined, plasma cells were found in both samples. The other investigations to help confirm the clonality of the cells and for prognostication were then carried out. The monoclonal protein component found was light chain kappa; the most common expected finding being IgG, followed by IgA, then *k* or *l* light chain[7].

Conclusion

Whenever a patient's clinical findings fit the picture of multiple myeloma, there should not be a hesitation to consider myeloma as a diagnosis irrespective of the age of the patient.

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Disclosure Statement

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Competing Interests

Written informed consent has been obtained from the patient for publication of this case report and any accompanying images**.**

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