ISSN: 0976-3031

International Journal of Recent Scientific Research

Impact factor: 5.114

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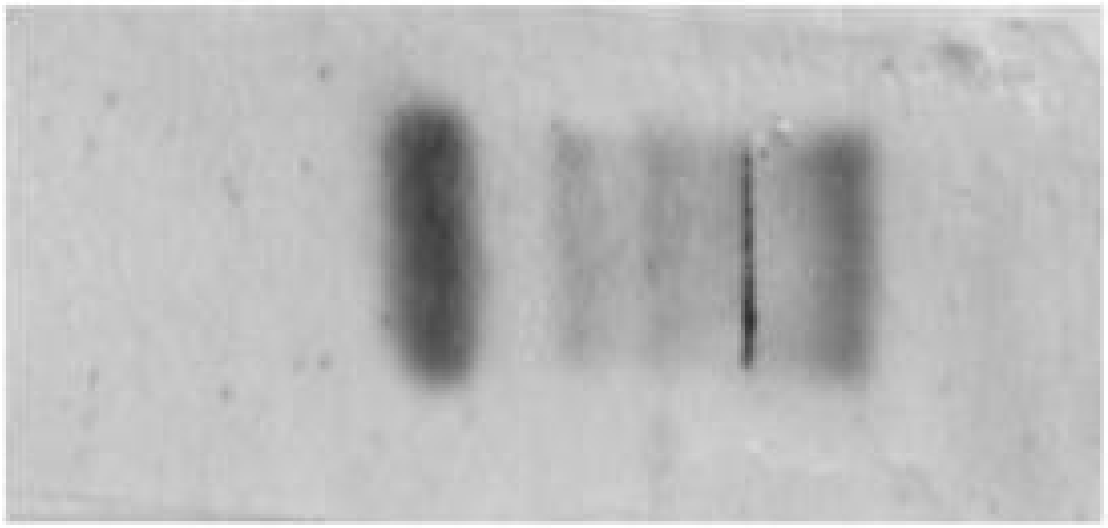

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Volume: 6 Issue: 9

THE PUBLICATION OF
INTERNATIONAL JOURNAL OF RECENT SCIENTIFIC RESEARCH
(IJRSR)
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Available Online at http://www.recentscientific.com

ISSN: 0976-3031

International Journal of Recent Scientific Research
Vol. 6, Issue, 9, pp.6101-6104, September, 2015

International Journal of Recent Scientific Research

RESEARCH ARTICLE

MULTIPLE MYELOMA IN TERTIARY CARE HOSPITAL KRISHNA INSTITUTE OF MEDICAL SCIENCES, KARAD:AN INSIGHT INTO THE CLINICAL;LABORATORY FEATURES OF 25 PATIENTS

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ARTICLE INFO

Article History:

Received 05th June, 2015
Received in revised form 08th July, 2015
Accepted 10th August, 2015
Published online 21st September,2015

Key words:

Multiple Myeloma, Plasma cell neoplasms, Anemia, Bone pain.

ABSTRACT

Introduction

Plasma cell Neoplasms are monoclonal proliferations characterised by the secretion of an immunoglobulin products known as component "M" or monoclonal.
The objective of the present study was to correlate their clinical, morphological and phenotype characterised in 25 patients.

Materials and Methods

A 3 year retrospective review was performed from the files of the hematology service of the tertiary care hospital Krishna Institute of Medical Sciences (KRISHNA INSTITUTE OF MEDICAL SCIENCES), Karad searching for patients with a diagnosis of plasma cell neoplasms and following variables were analysed: age, gender, clinical symptoms, evolutions, localisation, laboratory tests, morphology.
Of the 25 patients, all were reported as plasma cell dyscrasias with bone marrow plasma cells >30 % and 3 patients had associated plasmacytomas of chest wall.

Results

Males predominated with 52 %, females 48% and age ranged from 30-92 years. Most of the patients presented with anaemia, backache and renal disease. The time of symptomatology varied from 3-12 months. Laboratory tests revealed that most of the patients had anemia, hypercalcemia, lytic bone lesions, raised erythrocyte sedimentation rate (ESR), M band on Electrophoresis. Mature forms of plasma cells predominated morphologically however few of the cases had immature plasma cells as well. Treatment depends on the clinical staging and laboratory data.The average percentage of bone marrow plasmacytosis at diagnosis was 39%. Clinical features at presentation were anemia (100%) and bone pains (80%), while pathological fractures were found in (44%) and nephropathy in (24%).

Conclusion

Presence of bone pain and anemia in elderly patients should alert the clinicians to investigate along the lines of MM. Majority of patients had osteolytic lesions on X-ray and pathological fractures.

INTRODUCTION

Multiple Myeloma is a relatively rare malignant haematological disease, which is characterised by the multicenteric proliferation of plasma cells in the bone marrow. It develops mainly in men aged 50 to 80 years, with a mean of 60 years [1].A myeloma is a disease of adults, it manifests by bone pain, lytic injuries in several bones, anemia and recurring infections. It was first described in 1844 by Dr. Samuel Solly, who assigned the name Mollities Ossium to condition [2]. Dr Bence Jones studied urine sample and described the proteins that bear his name (BJ proteins) [3]. MacIntyre described the affected bones as softened and fragile, with their interiors replaced with a soft "gelatinform" blood red substance. Dalrymple suggested that the disease began in the cancellous bone and extended through the periosteum. The nucleated cells, which formed the bulk of the gelatinous material, were heterogenous in size and shape, but the majorities were round to oval. Many of the larger and more irregular cells frequently contained two or three nucleoli [4].

The term "multiple myeloma" was coined in 1873 by Von Rustizky who independently described a similar patient to emphasize the multiple bone tumors that were present [5]. Multiple myeloma (MM), a clonal malignancy of plasma cells is common haematological malignancy, currently accounting for 13.4 % of all haematological malignancies, and 2% of all cases related mortality [6].

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The clinical features of the illness usually include bone pain, which is also a common presentation of other disease conditions of this particular age group [7]. This leads to delay in diagnosis as well as mis-referrals, which is usually in the long run affect treatment outcome. A high index of suspicion is therefore important and which serves as a guide and necessary aid to early diagnosis.

Thus therefore this study aims to describe the frequent clinical and laboratory features associated with MM at presentation in this environment.

MATERIAL AND METHODS

A retrospective study of 25 patients who were diagnosed with MM over a period of 3 years, Jan 2012 – Dec 2014, were reviewed. Clinical presentation, laboratory and radiological data were taken from patient, medical records.

Clinical information was gathered from clinical files and following variables were analysed- age, gender, localisation, duration of symptoms and laboratory tests performed. The clinical, morphological variables and laboratory features were correlated.

A total number of 25 patients were assessed; their ages ranged from 30 to 92 years. The clinical data of patients with multiple myeloma are depicted in table 1.

The youngest patient was 30 years old male, who at the time of diagnosis presented with bilateral renal disease. The oldest patient was a male of 92 years. Average age of presentation was 65.9 years. There were 13 (52%) males and12 (48%) females. The average percentage of bone marrow plasmacytosis at diagnosis was 40 %, in this patient group.

M- Male, F- Female, ESR- Erythrocyte Sedimentation Rate, MPC- Mature Plasma Cells, IPC- Immature Plasma Cells.

The clinical features at presentation as shown in table 2, anemia was noted in 100% of the patients and bone pains in 80%, while complications of myeloma such as pathological fractures were found in 44% and nephropathy in 24% of the patients. 40% of the patients showed thickened “M” Band on electrophoresisand osteolytic lesions on X- ray, amyloidosis of skin was seen in 4% of patient in this study. Laboratory abnormalities were observed at diagnosis.

Table 1 Clinicopathological characteristics of patients with multiple myeloma.

Case	Gender	Age	ESR	Site of lytic bone lesion	Laboratory findings	Morphology on Bone marrow
1	male	37	150	Skull, vertebra	Anemia	MPC
2	female	70	100	Skull, vertebra	Anemia, M band	MPC
3	female	68	40	Skull	Anemia, M band	MPC
4	female	70	30	-	Anemia	MPC
5	female	80	60	-	Anemia	MPC + IPC
6	female	62	65	-	Anemia	MPC
7	male	30	140	-	Anemia	MPC
8	male	72	100	-	Anemia	MPC
9	male	70	120	-	Anemia, M band	MPC
10	male	56	60	Skull	Anemia, M band	MPC + IPC
11	male	60	40	Vertebra	Anemia, M band	MPC
12	male	92	135	-	Anemia	MPC
13	female	60	75	-	Anemia	MPC
14	male	86	140	Vertebra	Anemia, M band	MPC + IPC
15	female	65	165	-	Anemia	MPC
16	male	70	120	-	Anemia, M band	MPC
17	female	62	105	-	Anemia, M band	MPC
18	male	62	105	-	Anemia, M band	MPC
19	male	68	135	Vertebra	Anemia	MPC + IPC
20	female	65	50	Pelvis(iliac bone)	Anemia	MPC
21	female	65	90	-	Anemia, M band	MPC
22	female	85	110	Vertebra	Anemia	MPC
23	male	65	70	-	Anemia	MPC
24	female	68	100	Vertebra	Anemia	MPC
25	male	60	60	-	Anemia	MPC

Table 2 Frequency of occurrence of some important clinical and laboratory features.

Features	Presence of features (%)	
	Yes	No
1. Bone pain	20 (80)	5(20)
2. Pathological fracture at diagnosis	11(44)	14(56)
3. Anemia at diagnosis	25(100)	0(0)
4. Nephropathy at diagnosis	6(24)	19(76)
5. Thickened M band on electrophoresis	10(40)	15(60)
6. Osteolytic lesion on X- ray	10(40)	15(60)
7. Presence of Amyloidosis	1(4)	24(96)

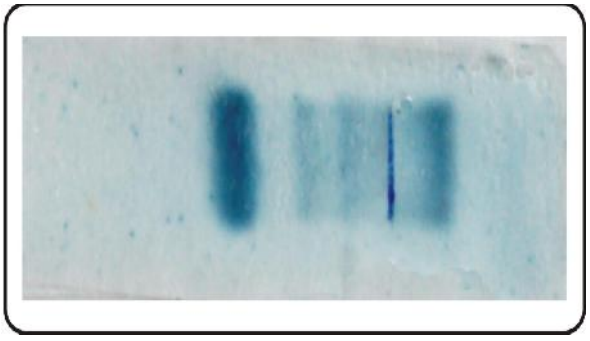

Fig. 1 Strong “M” Band

The median hemoglobin concentration at diagnosis was 8.6 g/dl, total white blood cell (WBC) count was 5.22x10 ^{9} /L, platelet count 180.2 x 10 ^{9}/ L. The known clinical prognostic indicators of poor outcome, such as presence of nephropathy and pathological fractures were found more in males at presentation.

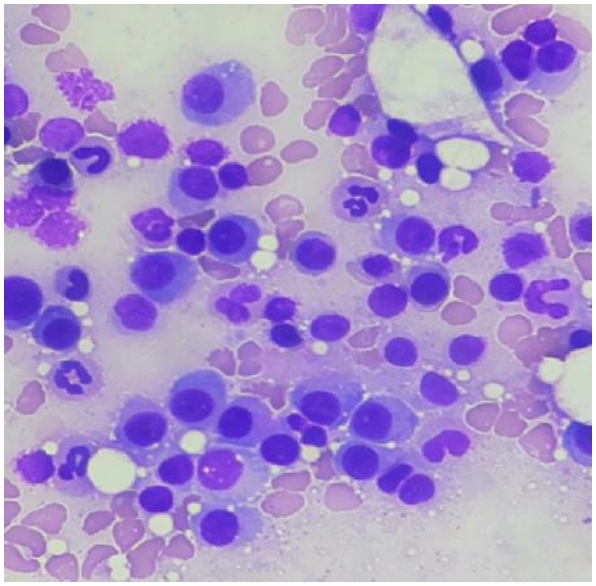

Fig.2 Mature Plasma cells (400 x magnification bone marrow aspiration**)**

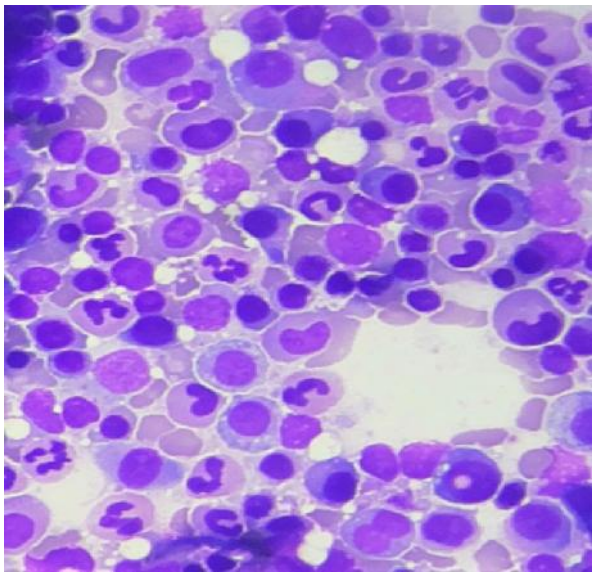

Fig.3 Mature and immature Plasma cells (400 x magnification bone marrow aspiration)

Morphologically, the neoplastic cells corresponded to mature plasma cells in 21 patients (Fig.2), and 4 patients showed mature and immature plasma cells (Fig.3)

DISCUSSION

In the USA, plasma cell myeloma corresponds to 1% of the total of all malignant tumors and to 10 to 15 % of the haematopoietic neoplasms[8,9].Bone andextra osseous plasmacytomas comprise 3%to 5% of plasmatic cell neoplasms in USA[10].

The etiology is still unknown; however, they have been related with chronic antigenic stimulation due to infection, or with the exposure to specific toxic substances or radiation [11].

Ries *et al*. observed that plasma cell myeloma, bone and extraosseous plasmacytoma are more common in men than in women [9]. Similar findings were seen in the present study.

The average age of presentation in the present study was 65.9 years, where as in the western literature the average age for the myeloma patients is 60 years [12].

The clinical presentation of the plasma cell myeloma varies and in the present study anemia was the most common presenting feature and all the 25 patients presented with anemia (100%). Next common presenting feature was bone pain seen in 80 % of patients. Anemia occurring in background of bone pains, this finding is similar to that reported by Fasola *et al*[13], Omoli *et al* [14], and Riccardi *et al* [15].

Majority of the patients in the present study are elderly, and presented with anemia and bone pain. Therefore it becomes necessary and very important to further evaluate the patients in the older age group to rule out myeloma as well as other diseases of the elderly. Clinicians should bear this in mind in order to prevent delayed diagnosis.

The presence of anemia in patients results first by the replacement of bone marrow by neoplastic plasma cells and / or because of renal damage resulting from the loss of erythropoietin [16].

There was high incidence of pathological fracture (44%) in the present study. Most of them were diagnosed on plane radiograph. This is similar to the finding reported by the Salawu *et al* [7], who observed pathological fractures in 44% of their myeloma patients. Fracture in myeloma is associated with increased morbidity and poorer prognosis [17].

Majority of the patients (76%) did not have renal impairment and 24% of patients presented with renal impairment in the present study. This is known to affect treatment outcome adversely. However presence of amyloidosis was very rare and was seen in 4% of patients.

Histologically, we observed an almost complete substitution of the normal bone marrow elements by neoplastic mature and immature plasma cells.

Therefore it is very important to investigate elderly patients with laboratory investigations of high sensitivity & specificity, so that early diagnosis and treatment could be done.

CONCLUSION

We observed that Multiple myeloma was more common in elderly patients, age ranging from 32- 92 years. Average age of presentation was 65.9 years. Myeloma is not seen in children & is rare in adults younger than 30 years. In this series of patients males are commonly affected than females.

Anemia and bone pains were the major presenting features and this should alert the clinician to investigate along the lines of Multiple Myeloma.

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How to cite this article:

ShakuntalaS. Aramani *et al*., 2015. Multiple Myeloma in Tertiary Care Hospital Krishna Institute of Medical Sciences, Karad:An Insight Into The Clinical; Laboratory Features Of 25 Patients. *International Journal of Recent Scientific Research. 6(9), pp. 6101-6104.*

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International Journal of Recent Scientific Research

ISSN 0976-3031