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ORIGINAL ARTICLE

A Retrospective Analysis on Prevalence of Multiple Myeloma in Young patients with presentation of Backache

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ABSTARCT

Aim: To determine the prevalence of Multiple Myeloma in young patients.
Study design: Retrospective study
Study duration: 2009 to 2020
Methodology: Thirty six patients with diagnosis of Multiple Myeloma out of 258 bone marrows were selected for this study. All inclusion and exclusion criteria were followed.
Results: Results showed that the prevalence of disease in this group was mostly in 4th and 5th decades of life with primary complaint at the time of presentation was backache.
Conclusion: Patients with history of chronic backache should be taken seriously as it is one of the major complaints at time of presentation with Myeloma. Non invasive procedures must be followed by bone marrow examination to support the diagnosis.
Keywords: Multiple myeloma, backache, clonal disorder, bone marrow

INTRODUCTION

Multiple myeloma is a clonal disorder of neoplastic plasma cells which arise from the post-germinal lymphoid B-cell lineage in the bone marrow (Dickran Kazandjian, 2016)

Plasma cells are the mature effectors of the B-cell lineage and they are terminally differentiated, non dividing, antibody secreting cells (Domenico Ribatti, 2018).

According to United States surveillance and epidemiology, the disease represents approx.1% of all malignancies and 10% of Hematological malignancies. It is diagnosed at an older age, with median age around 70 years (Artur Jurczyszyna et al., 2018)

The American cancer society estimates that in the USA, approx. 32,270 new cases of Multiple myeloma (17,530 in men and 14,740 in women) will be diagnosed in 2020. According to them the life time risk of getting Multiple myeloma is 1 in 125(0.8%). About 12,830 deaths from Multiple myeloma (7,190 in men and 5,640 in women) are expected to occur in year 2020 (Dhaval Shah, 2020).

An observational study done in Latin America shows that the incidence of Multiple Myeloma is higher in Western countries and USA as compared to Asian countries (Vania T.M. Hungria, 2016).

The common presenting signs and symptoms of Multiple myeloma include bone pains, pathological fractures, weakness, anemia, recurrent infections, hypercalcemia, spinal cord compression and renal failure (Sadia Sultan et al.,2016).

In the past acronym,"CRAB" was used to describe Myeloma. C (↑Ca level), R(renal insufficiency), A(anemia), B(bone abnormalities) (Pamela kaufman,2018).

The first well documented case of Multiple myeloma, just based on the clinical presentation, was described by Solly in 1844. The patient Sarah Newbury was 39 years old house wife who had developed severe back pain and died after 4 years (Domenico Ribatti, 2018).

The diagnostic tools used for this neoplastic disorder are various blood tests, urine examination, bone marrow biopsy and imaging studies (Seema Singhal and Jayesh Mehta, 2006)

The objective of the study was to find out the prevalence of Multiple Myeloma in young patients with most common presentation as backache.

METHODOLOGY

It was a retrospective study, ranging from 2009-2020. Cases were selected from bone marrow biopsies, mostly referred from GTTH to Pathology Department of LM&DC. Out of a total of 258 bone marrows, 36 were diagnosed as Multiple Myeloma, after history, clinical presentation, laboratory investigations and confirmation on bone marrow biopsies.

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Inclusion criteria: Patients from Orthopedic Department of Ghurkii Hospital were selected to include in our study to get good number of cases. Patients data was saved in LM&DC Pathology Dept. Patients of all ages were included in this study. Those who presented with Monoclonal Gammopathy of Undermined Significance (MGUS) or Smoldering Multiple Myeloma or any other Plasma cell dyscrasias were not included in this study. Patients who were asymptomatic at time of presentation were also not included. All patients with history of chronic backache and bone pains were considered on priority basis.

Data analysis: Clinical data was collected from the medical records of the patients, fulfilling inclusion criteria. The list of parameters which were analyzed included age at the time of diagnosis, sex, h/o backache and h/o fall, bone pains, anemia, ESR, renal function tests and Bence Johnes proteins. This was to find out the most common parameters present at the time of presentation in young patients.

RESULTS

In this study 36 patients with confirmed diagnosis of MM were included. The age of the patient ranged between 25-82years. The mean age at the time of MM diagnosis was 54. Out of 36 patients, 24 patients (66.6%) were less than 60 years of age and 12 patients (33.3%) were equal to or above 60 years of age.

Table 1: Age distribution in multiple myeloma (n=36)

Age range	Cases
21-30	1
31-40	4
41-50	11
51-60	12
61-70	5
71-80	2
81-90	1

There was a male predominance in the present study. Out of 36, 21(58.3%) were male whereas 15(41.6%) were female. Patients male to female ratio was 1.3:1.

ESR was performed on all patients. 25(69.4%) patients out of 36 had a raised ESR more than 100mm fall at the end of 1st hour whereas, 11(30.5%) had a raised ESR but it was less than 100mm fall at the end of 1st hour.

At the time of diagnosis, 33/36 (94.3%) were anemic, 21/36(58.3%) had history of backache, 9/36(25%) had h/o fall, 12/36(33.3%) presented with deranged renal functions. Bence Jones protein were done only on 10 patients, out of 10 only 02 were positive for it, showing 20% positivity.

Table 2: Clinicohematological presentation in multiple myeloma (n=36)

Clinico-hematological presentation	No. Of cases
Backache	21
Bone pains	17
Anemia	33
Deranged Renal Function	12

Table 3: Severity of anemia in multiple myeloma (n=36)

Anemia	No. of cases
Mild (12-10g/dl)	11
Moderate (10-8g/dl)	10
Severe less than 8g/dl	12

DISCUSSION

Multiple myeloma is a neoplastic plasma cell disorder characterized by proliferation of clonal plasma cells in the bone marrow, monoclonal protein in the blood or urine and associated organ dysfunction. Multiple myeloma is incurable disease with the median survival of 3-4 years (Sashidaran et.al., 2015).

This disease is common worldwide; the incidence being more common in Western countries as compared to Asian countries(Vania T.M. Hungria,2016).

Many studies were carried out on Multiple myeloma in Pakistan, in the past (Shaheen et al.,1999; Mansoor et.al.,2005; Inamullah et.al.,2010; Basit et.al.,2014).

Our study was conducted in the Pathology Deptt. of Lahore Medical and Dental College Lahore. Most of the cases were referred from spine centre of Orthopedic Deptt. at GTTH, Lahore. It is one of the best spine centre in Asia and the cases are referred from within and out of Pakistan.

This study is spread over a long span of period, so we could get a considerable number of cases. Multiple Myeloma usually appears insidiously, and is often observed in people with age more than 60 years with male predominance. In our study the age ranged between 25-82 years. Most of the patients presented in 4th and 5th decades of life (Table 1). It was observed that the mean age and gender distribution in our patients was consistent with similar studies that were conducted in the previous year's local studies (Sadia et al.,2016; Basit et al.,2014).

A study conducted in India showed reported cases of MM with median age of onset quite early i.e. 55 years as compare to other Asian patients, viz. Thai (59 yrs.), Chinese (59 yrs.), Koreans (61 yrs.), Singaporean (62 yrs.), Taiwanese (63 yrs.), Hong Kongese (65 yrs.) and Japanese (66 yrs.) whereas the patients from Latin America showed median age for MM(61 yrs.) and Africa (62 yrs.) (Kaustubh Bora, 2019) which showed that in developing countries, the median age for disease presentation is low as compare to developed countries.

In present study, at the time of presentation, mostly patients presented with complications and more advanced disease. In our study, the patients commonly presented with backache (55.6%) and h/o fall (25%) (Table 2).

Comparable presenting complaints were observed in a study done in Rehman Medical College Peshawar in 2019,who detected backache in (42.5%) patients whereas bone pains were seen in 44.4% patients in our study (Table 2) as compared to another reported by Sadia Sultan in2016, showing 67.2% patients presented with bone pains.

Primary clinical manifestation that is Anemia, due to infiltration of bone marrow by Myeloma cells (plasma cells). In our study, about 91.7% patients showed anemia, in which we categorized them according to mild, moderate and severe anemia (Table 3). Hemoglobin between 12g/dl to 10g/dl were considered mild, between 10g/dl to 8g/dl were moderate and less than 8g/dl were included in severe. In our study, 33.3% were landed in mild category, 30.3% in moderate and 36.4% in severe category. Anemia at presentation in our study is consistent with the studies conducted by Sadia et al., 2016; Yasmin et al., 2013.

Our study showed deranged renal functions in 30.6% cases, which included high urea and creatinine levels (Table 2). Similar results were found in another study conducted by Azhar Hussain et al in 2019 showing 27.2% patients with raised creatinine. Bence Jones proteins were positive only in 20% cases of our study. Similar results were found by Dr Sagale MS et al in 2017 with 20% positivity.

CONCLUSION

It is concluded that the no. of cases of Multiple Myeloma in Pakistan which comes in Asia are comparably less than western countries.

The short comings of my study are that patient came from hospital most of the time with just CBC with ESR and no other preliminary tests required for Multiple Myeloma to help in diagnosis, like serum Calcium level, urine for Bence Jones Proteins, Mband on serum electrophoresis, X-Ray of flat bones for osteolytic lesions. That's why I have to limit my parameters. It should be mandatory to perform these tests before bone marrow to help in diagnosis and to maintain a complete record.

Conflict of interest: Nil

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