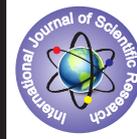


VARIOUS INTOXICANTS AND ITS RELATION TO MULTIPLE MYELOMA - A HOSPITAL BASED STUDY AT GAUHATI MEDICAL COLLEGE & HOSPITAL, GUWAHATI, ASSAM



Oncology

KEYWORDS: Myeloma, vernerable, Intoxicant

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ABSTRACT

Findings from different studies evaluating risk of developing multiple myeloma (MM) and exposure to pesticides as a general category, including findings among persons who reported ever using pesticides or among licensed pesticide applicators, have been inconsistent; as some studies reported positive associations while others reported inverse associations. This study aimed to investigate the association between pesticides and developing MM. **Summary :** Prevalence of MM is significantly high ($p > 0.00001$) among the farmers working in agriculture as compared to those in farms; Pesticide exposure is relatively high with cultivation of crops than vegetable ($p < 0.00001$); among the farmers working in farms, those who work in farm with furred animals are more venerable ($p < 0.00001$) to the prevalence of MM than the others; frequency of pesticide exposure has no effect ($p = 0.354$) on the prevalence of MM; prevalence of MM is significantly high ($p = 0.0005$) among farmers who expose to pesticides for more than 5 years as compared to those exposing for less time and prevalence of MM is very insignificant ($p < 0.00001$) among the fruit and pesticide sellers.

INTRODUCTION

Multiple myeloma (MM) is a clonal plasma cell malignancy characterized by the proliferation of neoplastic plasma cells. It is a malignancy of plasma cells that results in an overproduction of light and heavy chain monoclonal immunoglobulin (Ig). More importantly, delineation of the mechanisms mediating plasma cell proliferation, survival and migration in the bone marrow microenvironment may enhance the understanding of pathogenesis, and a better understanding of the molecular pathogenesis is fundamental for developing more effective prognostic, therapeutic and preventive approaches.

MATERIALS AND METHODS

This study is based on studies conducted on "Various Intoxicants and its Relation to Multiple Myeloma - a Hospital Based Study at Gauhati Medical College & Hospital, Guwahati, Assam." A total of 100 cases were studied in the Out Patient Department (OPD) of the Clinical Haematology Department, Gauhati Medical College & Hospital, and Guwahati, Assam. Being a descriptive study, the data were procured from the OPD of the same department. **Research type** - Hospital based cross-sectional descriptive study. **Study setting** - the present study has been undertaken in the Out Patient Department (OPD) of the Clinical Haematology Department of Gauhati Medical College & Hospital, Guwahati, Assam. **Study period** - the study period was three years commencing from November, 2010 to October, 2013. **Study population** - the study population comprise of 100 numbers of newly diagnosed cases of MM attending the OPD of the Clinical Haematology Department of Gauhati Medical College & Hospital, Guwahati, Assam during the period of November, 2010 to October, 2013. Before undergoing the study clearance from institutional ethical committee was obtained. Analysis of data was done in the year 2014-15. **The sample** - Sample size of 100 number of newly diagnosed multiple myeloma patients were taken into the study during the period of November, 2010 to October, 2013. **Selection of cases** - We have taken all the newly diagnosed cases of MM into the study attending at OPD of the Clinical Haematology Department of Gauhati Medical College & Hospital, Guwahati, Assam during the period of November, 2010 to October, 2013. Initially patients were selected purely on clinical ground and then negative cases were excluded after diagnosis based on International Myeloma Working Group (IMWG) criteria for diagnosis of monoclonal gammopathys.

Inclusion criteria - One hundred newly diagnosed cases of MM of all age group from November, 2010 to October, 2013. **Exclusion criteria** - (1) Old diagnosed cases of MM that are under treatment. (2) Monoclonal gammopathys of undetermined significance (MGUS) (3) Asymptomatic (smoldering) MM. **Protocol** - The proforma was prepared based on universal standard protocols for evaluation of MM which contains separate history, examination and investigation parts. The International Myeloma Working Group (IMWG) criteria for classification of monoclonal gammopathys, multiple myeloma and related disorders were used for diagnosis of the disease. During the study period Immunofixation electrophoresis test (for serum/urine) was not available in the institute. So this test was not included into the study. Then staging was made according to International Staging System (ISS). Performance status of patients was made according to Eastern Co-operative Oncology Group (ECOG) standard performance protocol (Appendix-1). **Methods** - Details of the patient - Details of the patients were recorded in the manner in order of age, sex, religion, caste, occupation, address, hospital number and registration number for identification and documentation. When patients were first examined a detailed history was taken and thorough clinical examination was done. Then they underwent a battery of investigations to confirm diagnosis. All the patient's history, clinical examination, investigation findings, and diagnosis data were recorded in a pre-designed and pre-tested proforma. **Statistical analysis** - data were analysed using statistical package and results and observations were presented in tabular form. Statistical tests were applied wherever required.

RESULT AND OBSERVATIONS

Personal habits of taking various intoxicants

Under this category of inquiry, patients having habits like smoking, chewing tobacco, betel nut, drinking alcohol, etc., were attempted to assess. They were asked since when they are taking these intoxicants, the amount that they use to take and whether the habit still prevails. These findings are presented in the following table.

1. Distribution of patients personal habits of taking various intoxicants N=100

Intoxicants used	Male		Female		Total	
	No.s	%	No.s	%	No.s	%
Betel nut	15	22.39	13	39.39	28	28

Smoking	9	13.43	1	3.03	10	10
Tobacco chewing	7	10.47	1	3.03	8	8
Alcohol	2	2.99	1	3.03	3	3
Others	00	00	00	00	00	00
Smoking and tobacco chewing	2	2.99	00	00	2	2
Smoking and betel nut	3	4.48	00	00	3	3
Smoking and alcohol	2	2.99	00	00	2	2
Tobacco and betel nut	3	4.48	00	00	3	3
Tobacco and alcohol	3	4.48	00	00	3	3
Betel nut and alcohol	3	4.48	00	00	3	3
Smoking, tobacco and betel nut	1	1.49	00	00	1	1
Smoking, tobacco and alcohol	1	1.49	00	00	1	1
Smoking, betel nut and alcohol	1	1.49	00	00	1	1
Tobacco, betel nut and alcohol	3	4.48	00	00	3	3
Smoking, tobacco, betel nut and alcohol	2	2.00	00	00	2	2
No habit of taking these	10	14.93	17	51.52	27	27
Total	67	100	33	100	100	100

Table-1: Distribution of patient's personal habits of taking various intoxicants

The above table-1 shows that 28 (28%) patients were with the habit of taking betel nuts. However, as per individual category of males and females the picture is different. However, 27 (27%) patients did not have the habit of taking any intoxicants. The statistical analysis from the table-1 reveals that the habits of taking various intoxicants may affect the prevalence of MM as number of patients having the habits of taking various intoxicants is found to be highly significant ($p < 0.00001$). (Test statistics: 'Z' test for differences of two proportion, calculated value of 'Z'=4.6)

2. Distribution of use of tobacco /smoking by the patients N = 100

Use of tobacco/smoking	Males		Females		Total	
	No.s	%	No.s	%	No.s	%
Cigarette	3	4.48	00	00	3	3
Beedi	6	8.96	1	3.03	7	7
Tobacco chewing	7	10.45	1	3.03	8	8
Cigarette and tobacco chewing	11	16.42	00	00	11	11
Bide and tobacco	10	14.93	00	00	10	10
No habit of taking chewing tobacco/smoking	30	44.78	31	93.04	61	61
Total	67	100	33	100	100	100

Table-2: Distribution of use of tobacco/smoking by the patients

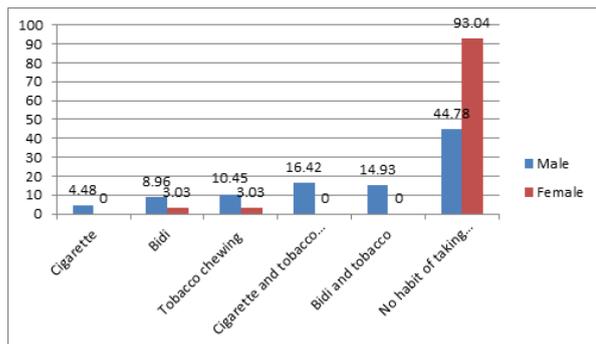


Figure-2: Bar diagram showing distribution of use of tobacco /smoking by the patients

The above table-2 shows that 8 (8%) patients chewed tobacco while 7 (7%) patients used to smoke Beedi and 3 (3%) patients smoke cigarette. A total of 11 (11%) patient's chewed tobacco & smoke cigarette and 10 (10%) patient's chewed tobacco & smoked Beedi. However, 61 (61%) patients did not have the habit of taking

tobacco/smoking. The statistical analysis from the table-2 suggest that there does not reveal any significant differences ($p=0.289$) in the number of patients with reference to use of different types of tobacco. From this we can conclude that different types of tobacco are equally responsible for the causation of MM. (Test statistics: 'X²' test for independences of attributes, calculated value of 'X²'=4.974)

3. Distribution of duration of taking alcohol by the patients N=100

Duration of taking alcohol (in years)	Males		Females		Total	
	No.s	%	No.s	%	No.s	%
1 – 2	6	8.96	1	3.03	7	7
3 – 4	4	5.98	00	00	4	4
> 4	7	10.48	00	00	7	7
No habit of taking alcohol	50	74.63	32	96.97	82	82
Total	67	100	33	100	100	100

Table-3: Distribution of duration of taking alcohol by the patients

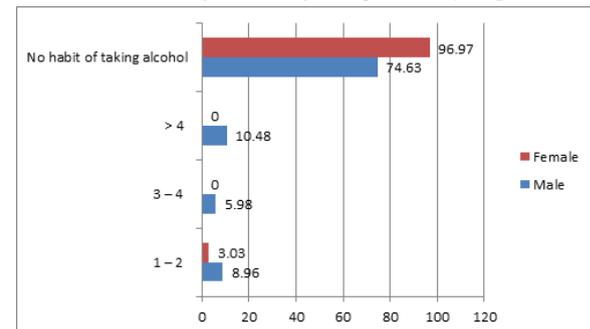


Figure -3: Bar diagram showing distribution of duration of taking alcohol by the patients

The above table-3 shows that 7 (7%) patients had been taking alcohol for more than 4 years, 4 (4%) patients for 3-4 years and 7 (7%) patients for 1-2 years. However, 82 (82%) patients did not have the habit of taking alcohol. The statistical analysis from the table-3 reveals that habit of consuming alcohol does not affect ($p < 0.00001$) the prevalence of MM and the study regarding duration, it is found that there is no significant difference ($p = 0.606$) in the number of patients with reference to duration of consuming alcohol. (Test statistics: 'X²' test for independences of attributes, calculated value of 'X²'=6.33)

DISCUSSION

Patients personal habits of taking various intoxicants

In the present study 28 (28%) patients were with the habit of taking betel nuts. However, as per individual category of males and females the picture is different. However, 27 (27%) patients did not have the habit of taking any intoxicants. Statistical analysis reveals that the habits of taking various intoxicants may affect the prevalence of MM as number of patients having the habits of taking various intoxicants is found to be highly significant ($p < 0.00001$).

1: Betel nuts

In the present study twenty eight (28%) of myeloma patients were with the habit of taking betel nuts which is statistically significant. There may be some relation between taking betel nut and MM. To our search, no known literature has been found so far to examine whether chewing of betel nuts contributes as an important attributes to the causation of MM. Hence, it needs further extensive study.

2: Distribution of smoking/tobacco taking habit

In the present study 8 (8%) patients chewed tobacco while 7 (7%) patients used to smoke Beedi and 3 (3%) patients smoke cigarette. A total of 11 (11%) patients chewed tobacco & smoke cigarette and 10 (10%) patients chewed tobacco & smoked Beedi. However, 61 (61%) patients did not have the habit of taking tobacco/smoking. Statistical analysis suggest that there does not reveal any significant differences

($p=0.289$) in the number of patients with reference to use of different types of tobacco. From this we can conclude that different types of tobacco are equally responsible for the causation of MM. Most of the patients could not remember regarding quantity, duration and frequency of different components of tobacco/smoking taken. So, these parameters were could not be studied. Stagnaro E et al. (2001)¹ and Miligi L et al. (1999)² have reported relative risk estimates of MM for current cigarette smoking ranged from 0.8 to 1.3 except the Mills PK et al. (1990)³ study taking cohort of 34,000 California Seventh Day Adventists, which found a relative of risk of 6.79 (95% CI: 1.37, 33.61). Hence our observation support the observation made by these studies. Further community based large research needed to examine whether smoking/tobacco contributes as an important attributes to the causation of multiple myeloma.

3: Distribution of alcohol taking habit

In the present study 7 (7%) patients had been taking alcohol for more than 4 years, 4 (4%) patients for 3-4 years and 7 (7%) patients for 1-2 years. However, 82 (82%) patients did not have the habit of taking alcohol. Statistical analysis reveals that habit of consuming alcohol does not affect ($p<0.00001$) the prevalence of MM. Ji J et al. (2014)¹⁴¹ have proposed that there is no effect of alcohol in causation of multiple myeloma. Thus the present study was also having almost similar observations with this study.

CONCLUSIONS

Different types of tobacco are equally responsible for the causation of MM. Habit of consuming alcohol does not affect the prevalence of MM.

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