PATTERN OF HEMATOLOGICAL DISEASES TREATED AT BIRAT MEDICAL COLLEGE AND TEACHING HOSPITAL

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ABSTRACT

Introduction

Hematological diseases are increasing day to day in the eastern region of Nepal. There are very few centers providing treatment to hematological diseases patients in the eastern region of Nepal.

Objectives

The aim of this study was to stratify the types of hematological diseases treated at Birat Medical College and Teaching Hospital along with their demographic and clinic-pathological features.

Methodology

This descriptive cross-sectional study was conducted from 21 December 2020 to 20 July 2021 in the Department of Hemato-Oncology. All the clinically as well as laboratorically proven hematological disease patients receiving treatment during the study period were taken as study population. Hematological diseases were defined as blood related diseases like anemia, blood cancers (like leukemia, lymphoma, multiple myeloma), hemolytic diseases, coagulation disease, thrombocytopenia, etc. Data were entered and analyzed in Microsoft Excel version 2010 and IBM SPSS Statistics version 22 respectively.

Result

There were a total of 48 cases who received treatment during the study duration. The mean age of the cases was 50 (range 2-92) years with female gender almost equal to male gender. About 29% cases were involved in tobacco/ smoking. Majority of the cases involved were leukemia (33%), lymphoma (21%), hemolytic disease(11%) and Immune thrombocytopenic purpura (11%) cancer. We had good clinical remission (61%) of the cases, majority of which were non malignant cases. Total 77% of the cases were alive, 4% were referred while 19 % of the cases expired during the study period, majority of which were acute leukemias.

Conclusion

There is a rise of hematological cancer in eastern Nepal and hence there is a need for a comprehensive hematological center in the eastern region of Nepal.

KEYWORDS

demographic; hematological; treatment.

INTRODUCTION

Hematological diseases are very common in the eastern region of Nepal however there are lack of literature regarding it. Hematological diseases are pathological conditions affecting the blood or blood producing organs. This group of disorders includes various types of anemia like iron deficiency anemia, megaloblastic anemia; blood cancers like leukemia , lymphoma, multiple myeloma and hemorrhagic conditions like Immunothrombocytopenic purpura, hemophilia etc. It includes diseases with the blood cells, blood vessels, bone marrow, lymph nodes, spleen, and the proteins involved in bleeding and clotting[2] Hematological diseases contribute significantly to disease burden in many countries .[3]

The major risk factors are tobacco smoking, alcohol consumption, household fuel, obesity,environment pollution and excessive pesticides.[4,5] All these risk factors are common in the eastern region of Nepal. According to the Ministry of Health, Nepal, Sickle cell disease and Thalassemia syndrome are more common in terai region and Tharu community.[6] There are very few centers treating hematological disease in the eastern region of Nepal. At Birat Medical College,we have a well equipped inpatient Hemato-Oncology department (IPD) with trained manpower who deal with medications as well as chemotherapy along with Medical Oncologist and Hematologist. We have a separate Hemato-oncology outpatient department(OPD) serving for outpatient patients. We have been providing hemato-oncology service continuously for the last three years.

With this study we planned to stratify the types of hematological diseases treated at eastern region of Nepal along with their demographic and clinic-pathological features.

METHODOLOGY

This descriptive cross-sectional study was conducted from 21 December 2020 to 20 July 2021 in the department of Hemato-oncology at Birat Medical College Teaching Hospital (BMCTH).

Written informed consent was obtained from the patient for the treatment as well as research purpose. Ethical clearance was obtained from the Institutional Review Committee of BMCTH (IRC-PA-88 / 2077-78) for conducting the study.

All the consecutive patients who were diagnosed as hematological diseases during the study period were taken as study population. For diagnosis of the disease, complete blood counts , peripheral blood smear, iron profile , vitamins level, immunological tests, bone marrow aspiration and biopsy tests were done in the patients. Those who were solid cancer and those not giving consent for enrollment in the study were excluded. Convenience sampling technique was used.

Proforma comprising patient details including age, sex, associated co-morbidities, types of disease, treatment received, clinical status etc was maintained. The objective was to calculate the demographic characteristics, types of disease prevalent, types of treatment received, and clinical status of the patients. The study was supported by a dedicated hemato-oncological team along with patients and family involvement. Data was collected by real-time meetings. Real time meeting was done during clinical examination of patients in inpatient or outpatient department for about 15-20 minutes . In case of mortality at home, data of patients were collected from the family by tele-communication.

Data was entered in Microsoft Excel version 2010 and analyzed using IBM SPSS Statistics version 22.

RESULT

There were total of 48 cases who got admitted for an average of 3.5 times during the study duration in the hemato-oncology department. The mean age of the cases was 50 (range 2-92) years (Table 1). Female gender was almost equal (48%) to male gender. 87% of the cases were married. Almost 29% percent cases were involved in tobacco/ smoking and 14% cases in alcohol. 10% and 14% cases were diabetic and hypertensive respectively. Majority of the cases were Hindu (89%) in religion and were non vegetarian (76%) mostly. Morang and Sunsari districts covered almost 79 % of the cases.

Table 1: Socio-demographic variables.

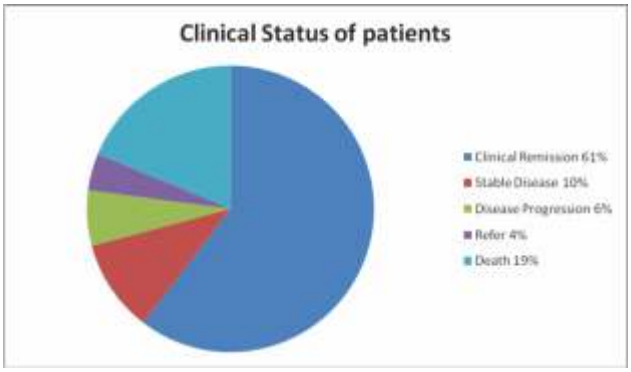
Characteristics	Numbers (N)	Percentage (%)
Mean age(years)/ (Range)	50 (2-92)	
Gender		
Male	25	52
Female	23	48
Marital Status		
Married	42	87
Unmarried	6	13
Habits		
Tobacco/ Smoking	14	29
Alcohol	7	14
Co-morbidities		
Diabetic	5	10
Hypertension	7	14
Religions		
Hindu	43	89
Muslim	2	4
Christian	3	7
Diet		
Non-vegetarian	39	81
Vegetarian	9	19
Districts		
Morang District	25	52
Sunsari District	13	27
Other Districts	10	21

Table 2: Types of Hematological disease

Types of Disease	Number (N)	Percentage (%)
Blood Cancer Types		
Lymphoma	10	21
Acute Leukemia	7	14
Chronic Leukemia	9	19
Multiple Myeloma	4	8
Anemia Types		
Hemolytic Anemia	5	11
Nutritional Anemia	4	8
Aplastic Anemia	1	2
Bleeding / Clotting Disease		
Essential Thrombocytosis	2	4
Hemophilia	1	2
Immune Thrombocytopenic Purpura	5	11

Table 3: Treatment Received.

Types of Treatment	Number(N)	Percentage(%)
Chemotherapy	20	42
Target Therapy	8	17
Immunotherapy	15	31
Basic Supportive Therapy	5	10



Majority of the cases involved were leukemia (33%), lymphoma (21%), hemolytic disease (11%), and Immune thrombocytopenic purpura(11%) cancer (Table 2). There were few (8%) nutritional anemia and multiple myeloma cases undergoing treatment at our department. Aplastic anemia and Hemophilia was found to be each 2% only. Among lymphoma, nine out of ten were Non Hodgkin lymphoma which included two periorbital cases too. Among leukemia chronic leukemia especially chronic myeloid leukemia(CML) dominated with almost eight out of sixteen cases.

During the study, cases received different treatments. 42% of cases received chemotherapy especially for leukemia and lymphoma cases. Common chemotherapy used were doxorubicin, cyclophosphamide, vincristine , prednisolone as per the chemotherapy regimens.[7] Majority of the cases received complete chemotherapy which was thrice weekly in nature. Seventeen percent cases received targeted therapy especially for cases like chronic myeloid leukemia and multiple myeloma.[8] Targeted therapy included tyrosine kinase inhibitors and proteosome inhibitors. Total thirty one percent cases received Immunotherapy which included hemolytic diseases, Immune thrombocytopenic purpura, aplastic anemia etc. Immune therapy included steroids, Immunoglobulins, immunosuppressants, immunomodulators etc.[9]

During the study period of about one-year, clinical status of the patients was obtained from the data and assessed. Clinical remission were the cases who after the treatment do not have disease clinically. Sixtyone percentage of the cases were in clinical remission after the treatment (Figure 1). Stable diseases were the cases whose disease were stable and didn't progress after the treatment. 10% of the cases were stable diseases. Disease progression were the cases whose disease progressed after the treatment and were still alive during the study duration. 6% of the cases were in disease progression. During the study period, total 77% of the cases were alive, 19% cases expired, and 4% cases were referred to a higher center. Out of 9 deaths, 2 deaths were due to COVID 19 while 7 deaths were due to disease progression. Both the referral cases were acute myeloid leukemia cases who needed bone marrow transplant facility which was not available in the center.

DISCUSSION

In our study, the majority of the cases were married, elderly (87%), who were diagnosed with blood cancers like leukemia, lymphoma and multiple myeloma. 29% of the cases were smoker / tobacco chewer and 81% of the cases were non vegetarian. Since 79% of the cases were from Morang and Sunsari districts only, we need to focus on awareness programs to these two districts strictly. The cause of increase prevalence in these areas could be environmental pollution as well as use of pesticides during farming.[10] Awareness on organic farming should be implemented by the government.[11]

As the majority of the hematological diseases diagnosed were advanced blood cancers, we need to focus on them more than the other diseases. As per the protocols,the majority of the cases received chemotherapy (42%) as they were diagnosed with blood cancers. The aim of the treatment was to cure the patients. The cause of delayed treatment at hospital could be due to fear of contracting COVID 19 at that time.[12] None of the cases received bone marrow transplantation in our department as we don't provide stem cell therapy at present. Such patients were referred to the higher center. However, our hospital is planning to develop a comprehensive cancer center along with stem cell therapy by the end of 2025 .

We had a good clinical remission (61%) of the cases during the study period, majority of which were non-malignant

cases. They were treated with more immunotherapy and supportive nutritional therapy. Total 77% of the cases were alive till the last date of the study which included cases with clinical remission, stable disease along with disease progression. 19% of the cases expired during the study period, majority of which were blood cancers in advanced stage. High mortality in these cases could be due to elderly patients with poor performances.[13] We need to make plans and policies for timely referral to an oncologist or cancer centers in case of hematological malignancy. Two patients who expired due to COVID 19 were cases with Chronic Lymphocytic leukemia (CLL) and Non-Hodgkin lymphoma (NHL) who were undergoing treatment with chemotherapy and were having good response to treatment. The CLL case was in the maintenance phase while the NHL case was in the induction phase. COVID 19 ruined all the effort and hardwork applied on the treatment of these cases. Blood cancer patients are more prone to COVID infection along with high mortality.[14]

There were three major challenges we faced during the treatment of hematological cases during our study period. First, there was delay in the diagnosis of disease due to unavailability of diagnostic special tests which required outsourcing to higher laboratories. Second, there was a shortage of medicines like chemotherapy, targeted therapy as well as Immunotherapies. Third, there was shortage of blood and blood products as there were less blood donation programs as well as increased demand for blood products. All the hurdles were due to the lockdown implemented for prevention of COVID 19 transmission.

CONCLUSION

There is an increasing trend of hematological diseases getting treated at Birat Medical College in eastern Nepal. There is a demand for a comprehensive hematological center to overcome the challenges during the treatment of hematological diseases.

LIMITATION OF THE STUDY

Unavailability of the special diagnostic tools and delay in diagnosis are the limitations of the study. This is a single center study with seven months duration only and hence our number of cases are limited. Beside this, there was severe impact by the first wave of COVID 19 pandemic at the same study duration due to long lockdown implemented by the government. If we collaborate with other institutions and do multi centered study, we will have a greater number of cases which will define the population of the eastern region of Nepal more evenly and precisely.

RECOMMENDATION

In our study, we can see many blood cancer cases with high mortality especially in elderly patients. So, we need to make plans and policies regarding early diagnosis and early referral so that we can treat them early. To prevent nutritional anemia, screening should be done, and all the high-risk cases need to be treated prophylactically with supplements. Regular deworming programs need to be implemented. Insurance coverage should be expanded so that even the poor patients can receive standard treatment. Stem cell therapy along with bone marrow transplantation should be feasible for all the Nepalese populations under insurance coverage.

CONFLICT OF INTEREST

None

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