INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PATTERNS AND FREQUENCIES OF DIFFERENT LEUKEMIAS IN A TERTIARY CARE HOSPITAL IN ASSAM

Pathology

Dr Asha Borah	Assistant Professor, Department of Pathology Assam Medical College & Hospital, Dibrugarh, Assam
Dr Bobby Duarah*	Associate Professor, Department of Pathology Assam Medical College & Hospital, Dibrugarh, Assam *Corresponding Author

ABSTRACT

Aim: To study the distribution of types of leukemias in Assam Medical College and Hospital based on types,age and sex.

Materials and methods: A retrospective study was carried out in the Pathology department, Assam Medical College and Hospital from January 2012 to January 2016.Diagnosis was based on complete blood count, peripheral blood smear and bone marrow examination for morphology with cytochemistry wherever required .FAB classication is followed in this study.

Results: Out of a total of 169 cases,88 cases(52.07%) were chronic leukemias and 81cases(47.93%) were acute leukemias.Of the chronic leukemias ,CML was common;81cases(47.9%)and in acute leukemias, AML was common;58cases(34.3%).Males were commonly affected; 101cases(59.7%).In this study leukemias were common in adults 126 cases(74.56%) followed by children 43 cases(25.44%).

Conclusion: In this study maximum cases were of CML and minimum cases were of CLL.In children majority of the cases were ALL.Leukemias were more common in males and in adults.

KEYWORDS

Leukemia,CML,AML,ALL.

INTRODUCTION :

The term 'Leukaemia' is used for neoplasms that present with widespread involvement of bone marrow and(usually,but not always)the peripheral blood.Leukemias are of two types- acute and chronic.Acute leukaemias are acute lymphoblastic leukaemia(ALL) and acute myeloid leukaemia(AML) whereas chronic leukaemias are chronic myeloid leukaemia(CML) and chronic lymphocytic leukaemia(CLL).Diagnosis of different leukaemias now depend on cellular morphological details and assessment of genetic changes in subtypes.French American British(FAB) morphologic classification of leukaemias has been used since many years.In this study the prevalence of different types of leukaemias along with age and gender distribution were studied.

MATERIALS AND METHODS :

The present retrospective study was carried out in the department of Pathology, Assam Medical College & Hospital , Dibrugarh, Assam, India over a period of 4 years (January2012 to January2016).A total of 169 patients were diagnosed to have acute/chronic leukaemias.Only newly diagnosed cases were included in this study and patients on cancer chemotherapy & radiotherapy were excluded.Detailed relevant medical history was obtained and clinical examination carried out.All the haematological parameters were noted.Blood counts were performed on automated haematology analyser and also verified on peripheral blood smear examination followed by bone marrow aspiration for definite diagnosis.The peripheral blood and bone marrow smears were stained with May Grunwald Giemsa stain.Special stains were applied on marrow aspiration and peripheral blood smear.

RESULTS :

In the present study 169 cases of leukaemias were diagnosed in a time period of 4 years(January2012 to January2016).Out of the 169 cases , 81 cases (47.9%) were of acute leukaemias and 88 cases (52.1%) were of chronic leukaemias(table 1).Among the subtypes of leukaemias , maximum number of cases were of CML(47.9%)[Fig-1] followed by AML(34.4%)[Fig-2],ALL(13.6%) [Fig-3]and CLL(4.1%) (table 2).Majority of the patients belonged to age groups 31-40 yrs.(25.4%).Among the subtypes , most common age group affected by ALL was of 0-10 yrs (73.9%).In AML , common age group involved was 31-40 yrs (27.5%).In CML common age group involved was of 31-40yrs (32.0%) and in CLL common age group involved was 61-70yrs (42.8%) (table 3).The leukaemias overall revealed a male preponderance with a percentage of 59.7% males and 40.3% females.The overall male: female ratio was 1.48:1 (table 4).

DISCUSSION :

Diagnosis of primary haematological malignancies has a multipara metric approach which includes evaluation of morphological cellular details and phenotypic and genotypic patterns.[1] In our study out of a total of 169 cases ,88 cases(52.1%) were of chronic leukaemias and 81 cases(47.9%) were of acute leukaemias.Differences observed in this study may be due to geographic variation of different types of leukaemias and genetic differences and need further study and evaluation.Among the subtypes of leukaemias maximum cases were of CML which is comparable with studies of D Costa GG et al[2] and Kulshrestha R et al [3].In this study CLL is rare only 7 cases(4.1%) which is comparable with D Costa GG et al ,Kulshrestha R et al and Chen et al[4] but CLL is most common adult leukaemia in western countries.In children ALL subtype was most prevalent i.e 17 cases (73.9%). Maximum AML and CML cases were found in adults.Similar results were seen by Nasim N et al[5] and Gupta R et al[6] and Paul B et al[7].Overall male preponderance was found in our study with a percentage of 59.7% in males and 40.3% in females (M:F=1.48:1). Similar results of sex distribution have been reported by Harani MS et al[8], Jmili NB et al[9], Ullah K et al[10], Salkar AB et al[11], Gupta R et al.

CONCLUSION :

This study concludes that chronic leukaemias were more common in this region.Among the children ALL is the most common leukaemia and among the adults CML followed by AML is most common.Leukaemias is predominantly found in males in this part of the country.Detailed haematological analysis including peripheral blood and bone marrow aspiration smears along with cytochemistry,immunophenotyping and cytogenetic analysis are necessary for early and definite diagnosis as well as effective management of leukaemias.

Table 1: Percentage of leukaemias

Type of leukaemia	Total cases	Percentage
Acute leukaemias	81	47.9
Chronic leukaemias	88	52.1
	169	100

Table 2 : Prevalence of different types of leukaemias

Type of leukaemia	Total cases	Percentage
ALL	23	13.6
AML	58	34.4
CML	81	47.9
CLL	07	4.1

Table3 : Age distribution in leukaemias

Age group(yrs.)	ALL	AML	CML	CLL	Total
0-10	17	7	1	-	25
11-20	4	5	8	1	18
21-30	1	6	15	-	22
31-40	1	16	26	-	43
41-50	-	14	17	1	32
51-60	-	4	10	2	16
61-70	-	4	4	3	11
71-80	-	2	-	-	2
Total	23	58	81	7	169

Table 4 : Sex distribution in leukaemias

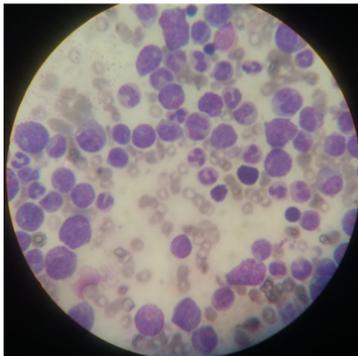| Type of leukaemia	Male	Female
Acute Leukaemias	45	36
Chronic Leukaemias	56	32
	101	68

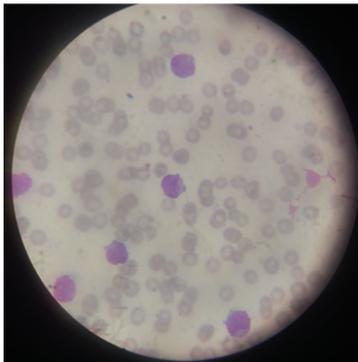**Fig 1 : Blood picture of CML showing myelocytes,bandcells, polymorphs, basophils (100x) Giemsa**

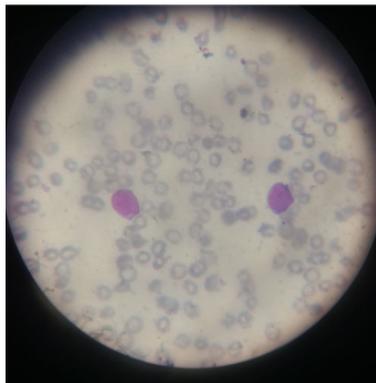**Fig 2 : Blood picture of AML showing myeloblasts(100x) Giemsa**

Fig 3 : Blood picture of ALL showing lymphoblasts (100x) Giemsa

REFERENCES :

1. Arber DA,Cousar J.Hematopoeitic Tumours: Principles of pathologic diagnosis.In: Greer JP,Rodgers GM,Foerster J,Paraskevas F,Lukens JN,Glader B,editors.Wintrobe's clinical haematology 13 edition.Philadelphia:Lipincotts Williams and Wilkins.2014 ;2: 1663-68 .
2. D Costa GG,Siddiqui HM,Pradhan RM,Gupte SS. Patterns of leukaemias: a ten year incidence study of 242 cases. J Postgrad Med 1989;35:191.
3. Kulshrestha R,Sah SP. Pattern of occurrence of leukaemia at a teaching hospital in eastern region of Nepal – a six year study.JNMA 2009; 48(173):35-40.
4. Chen B,Huang Z,Zhang X,Ou Yang J,Li J,Zhai Y. an epidemiological investigation of leukaemia incidence between 2003 and 2007 in Nanjing,China.J Hematol Oncol. 2010;3:21.
5. Nasim N,Malik K,Malik NK,Mobeen S,Awan S,Mazhar M.Investigation on the prevalence of leukaemia at a tertiary care hospital,Lahore. Biomedica 2013;29:19-22.
6. Gupta R,Kaul KK,Dewan D.Clinicomorphological profile in acute leukaemias:experience from a tertiary care centre in Jammu.Indian J Res.2015;4:4-6.
7. Paul B,Mukiibi JM,Mandisodza A,Levy L,Nkrumah FK.A three year study of 137 cases of acute leukaemia in Zimbabwe.Cen Afr J Med.1992;38:95-9.
8. Harani MS,Adil SN,Shaikh MU,Kakepoto GN,Khurshid M.Frequency of FAB subtypes in acute myeloid leukaemia patients at Aga Khan University Hospital Karanchi.J Ayub Med Coll Abbottabad 2005;17:26-9.
9. Braham Jmili N,Sendi Senana H,Labiadh S,Ben Abdelali R.Hematological characteristics ,FAB and WHO classification of 153 cases of myeloid leukaemias in Tunisia.Ann Biol Clin.2006;64:457-65.
10. Ullah K,Ahmaed P,Raza S,Satti TM,Chaudhry QU,Akhtar F,Kamaal M.Management of acute myeloid leukaemia-5 years experience at Armed Forces Bone Marrow Transplant Centre,Rawalpindi.J Pak Med Assoc.2007;57:434-9.
11. Salkar AB,Patrikar AB,Bothale K ,Malore S,Salkar A,Modani S. Clinicohematological evaluation of leukaemias in a tertiary care hospital.IOSR-JDMS 2014;13:126-34.