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Study of Acute Myeloid Leukemias in a tertiary care hospital

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Introduction

Acute myeloid leukaemia (AML) is a heterogeneous disorder characterized by clonal expansion of myeloid progenitors (blasts) in the bone marrow and peripheral blood.

Previously incurable, AML is now cured in approximately 35%–40% of patients younger than age 60 years old. It is a heterogeneous hematologic malignancy characterized by clonal expansion of myeloid blasts in the peripheral blood, bone marrow, and/or other tissues, which leads to impaired production of normal blood cells.[1]

Thus, leukemic cell infiltration in the marrow invariably leads to bone marrow failure manifesting in the form of anaemia or thrombocytopenia, while absolute neutrophil count may be low or normal, depending on the total white cell count.

AML accounts for approximately 20% of acute leukaemia in children and 80% of acute leukemia in adults.

Aims and Objectives

To study the morphology of various lymphoid and myeloid cells in acute leukaemia cases.

Materials and Methods

Peripheral blood samples: 2 ml of venous blood was withdrawn into EDTA tube for complete blood count. Hemoglobin estimation, packed cell volume and red blood cell count was done by automated analyzer. White blood cell count and platelet count was done using Automated analyzer The typing of anemia was done by automated analyzer and peripheral blood smear stained by Leishman Stain.

The present study, a prospective study which includes review of clinical records of newly diagnosed cases of Acute Myeloid Leukaemia admitted in a tertiary care teaching hospital of MGM's Medical College in Navi Mumbai. The study consists of examination of all the available clinical data, cell morphology on peripheral smear. The diagnosis of all cases were subjected to medical history taking (fever, bleeding tendency, therapeutic history and blood transfusion) and clinical examination (organomegaly and lymphadenopathy).Some cases underwent flow cytometric analysis using 3 colour flow cytometer.

Inclusion Criteria

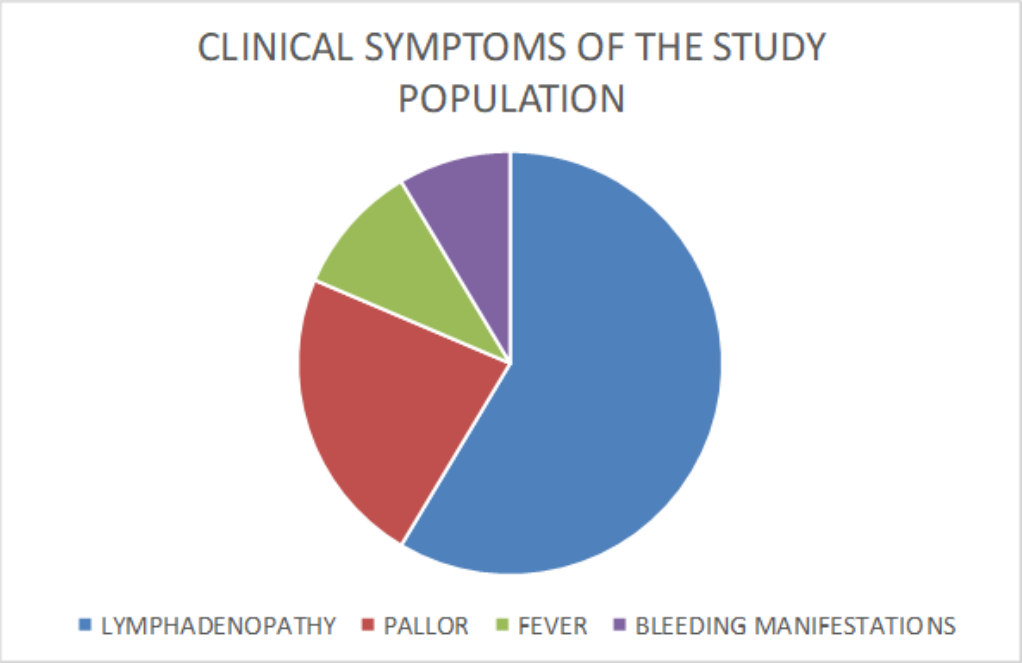
The diagnosed cases of Acute Myeloid Leukaemia admitted in a tertiary care teaching hospital of MGM's

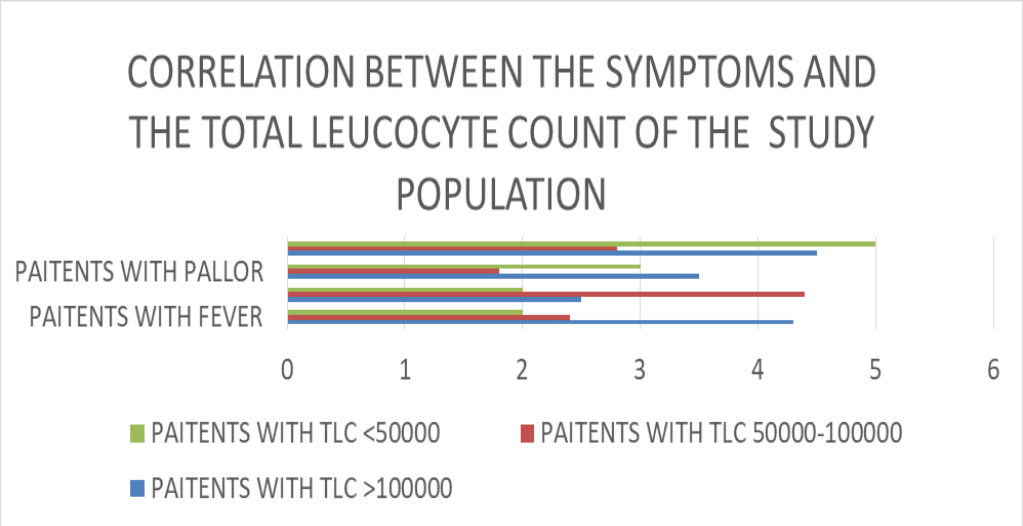
Medical College in Navi Mumbai region of Maharashtra state of India.

Exclusion Criteria

Patients unwilling to give consent for the research study admitted to tertiary care hospital. Paitents who dropped out of the study before complete workup , due to death or discharge against medical advice.

Observation





Sn.	Age	Male	Female	Hemoglobin (g/dl)	TLC(cells /cumm)	Platelet count (Lakhs)	Blast(%)	MPO staining	Flowcytometric analysis	Diagnosis
1.	6yr	M	-	10.6	57,910	1.05	35%	Negative		Acute Lymphoblastic Leukemia
2.	82yr	M	-	6.9	10100	51000	50%	Positive	CD 38+, CD 13+,CD 33+	Acute Myeloid Leukemia
3.	34yr	M	-	7.2	1,01,590	26000	73%	Positive		Acute Leukemia
4.	40yr	M	-	8.7	3,10,730	1.47	2%	Positive		Chronic Myeloid Leukemia
5.	3 yr	-	F	6.1	52,8150	4.84	38%	Positive		Acute Leukemia
6.	19yr	M	-	8.2	4890	40000	38%	positive		Acute Leuemia
7.	18	M	-	9.5	62630	10000	30%	Positive	HLA- DR+,CD 33+,CD117+, CD34+	Acute Myeloid Leukemia
8.	20	M	-	4.9	1,34,140	16000	30%	positive		Acute Leukemia
9.	55	-	F	4.2	88420	25000	48%	positive		Acute Leukemia
10.	37	-	F	8.3	23000	22000	61%	Positive	CD33+, CD7+, CD13+, CD64+	Acute Myeloid Leukemia

Among the cases studied , some presented with generalised body ache and weakness for which radiological investigations were done which was suggestive of Leukaemia.

Coronal sections of sacroiliac joints a 40 year old female showing diffuse a)T1 hypo and b)STIR (Fig 1 and Fig 2.)iso to hyper signal bone marrow intensities suggestive of infiltrating changes of yellow bone marrow consistent with Leukaemia

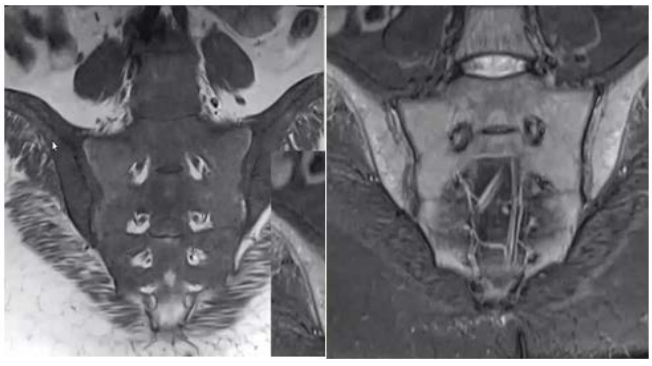


Fig 1: T1 Hypo image Fig 2. STIR image showingnfiltrating changes of yellow bone marrow .

Coronal images of a 55 year old male of bilateral hips showing a)T1 hypo and b)STIR iso to hyper signal intensities suggestive of marrow infiltration in axial skeleton seen with leukaemia.

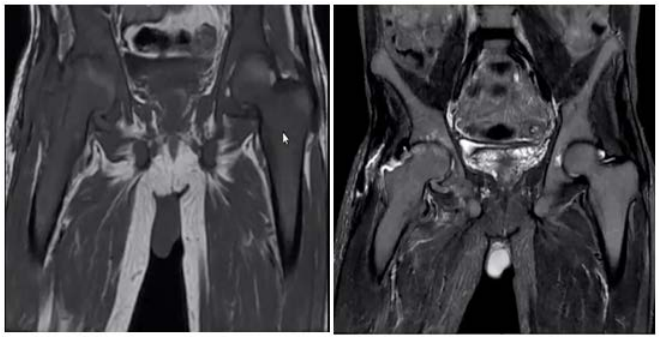


Fig 3. T1 hypo Fig 2. STIR image showing marrow infiltration in axial skeleton.

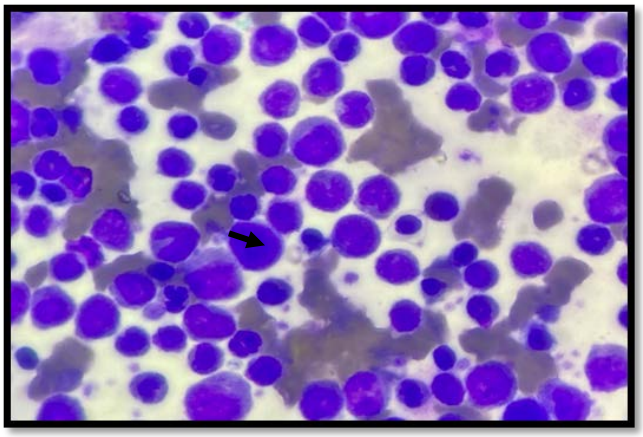


Fig 4: Showing Myeloid Precursor cells (Myeloblast) on Peripheral smear (100x H&E) shown with arrow.

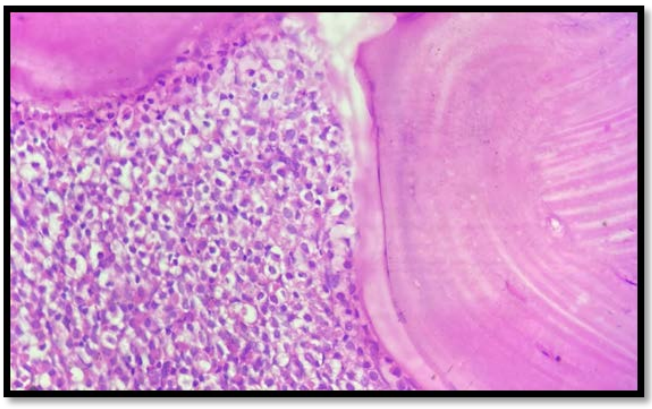


Fig 5: Bone marrow trephine biopsy of the same patient showing proliferation of myeloid precursors.

Conclusion

In the present study there were 10 cases of Acute Leukemias which were all Myeloid series predominant.

The mean age of presentation was 30-40 years with range of 5-70 years

Acute Myeloid Leukemia was more common in male paitents

All the cases of AML showed blast cells count more than 20 %.

Lymphadenopathy was the most common clinical manifestation in in the study population followed by fever.

Mean Hb% in these cases were

Mean TLC in these cases were

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