CONCLUSION

Our study was conducted at the Department of Pathology, King George Medical University, Lucknow. The study was prospectiveand retrospective descriptive type. We evaluated a total of 95 newly diagnosed cases of acute myeloid leukemia. We did a complete blood count (CBC) and peripheral blood morphology, after which a bone marrow aspirate was done. Bone marrow aspiration was subjected to morphological, cytochemical (myeloperoxidase staining) and immunophenotyping diagnosis.

Following conclusions were made,

- In our study population (ranging 7 months to 80 yrs), majority of the population comprised of paediatric patients. This could be attributed to the referral bias due to the more paediatric patients visiting our hospital. Paediatric patients comprised a good percentage of AML cases. The minimum age was seen in AML M7 subtype (7 months).
- Number of male patients was slightly more than the female patients.
- Overall non specific bone marrow failure symptoms and signs were seen. Overall most common symptom was fever followed by fatigue, weight loss and infection, the less common ones were bleeding, lymphadenopathy, bone pain, hepatomegaly and splenomegaly while the least common was abnormal mass. Bleeding was significantly found in cases of acute promyelocytic leukemia. However, they were not very helpful in differentiating the AML subtypes.
- The most common subtype of AML was acute myeloid leukemia with maturation .This finding well corroborates with the reported literature.
- Acute erythroid leukemia cases were diagnosed slightly more in number as compared to the previously reported literature.
- The total leukocyte count was raised in majority of cases. However, it was reduced in 1/3 rd of the cases.
- Peripheral blood blast count was >20% in majority cases.

However, approximately 1/4 th (23.16%) aleukemic cases were seen. Thus, highlighting the significance of careful morphological examination of the PBS smears.

• Thrombocytopenia was seen in majority patients. However, normal platelet counts were found in 1/12 th cases.

• The evaluation of morphological features of myeloid blasts was helpful in categorising subtypes of AML eg. Monocytoid blasts in AML 4 and AML5 and pleomorphic lobulated in AML M3.

• Auer rods were significant in identifying AML M1, M2 and M3 subtypes.

• There was 100% concordance between morphological and Immunophenotypic diagnosis and 76.19% concordance between cytochemical and Immunophenotypic Diagnosis.

• CD33 was the myeloid marker that was most commonly present in all the AML subtypes i.e.93.98% cases. CD13 was the next most common marker present in all the AML subtypes i.e.85.54% cases.

• AML M0, M1 and M2 cases were positive for CD34, CD13, CD33, CD117, MPO and HLADR.

• Cases of acute promyelocytic leukemia showed strong MPO positivity. Immunophenotyping showed CD34 -- and HLADR -- in AML M3 cases along with strong positivity for CD13 and CD33.

• Flowcytometry showed positivity for CD14 and CD11b along with other myeloid markers, thus confirming the finding of AML M4.

• As we did not have the specific markers for erythroid and megakaryocytic lineage, flowcytometry could not to be of any further use for our cases of AML6 and AML M7.

• Approximately, 1/3rd cases showed presence of aberrant markers, most common being CD19 followed by CD7 and CD2. Therefore, a extended panel as recommended by WHO is advised to rule out mixed phenotypic acute leukemia.

• As per cytogenetic data collected in the various AML subtypes, t(15;17) was most commonly seen in Acute promyelocytic leukemia subtype and t(8;21) in Acute myeloid leukemia with maturation.

Thus, complete and meticulous examination of peripheral blood and bone marrow aspirate smears helps in making the diagnosis in majority of the cases of acute leukemia. In cases where morphological features overlap or are inadequate for establishing a definitive lineage, cytochemistry comes into use. Myeloperoxidase is easily done, cheap and sensitive for identification of myeloid series of cells.

However, definitive diagnosis can only be made using flowcytometry as cytochemical staining may be equivocal in few cases.

Flowcytometry can also help in identifying expression of aberrant markers and making the diagnosis in case of acute leukemia of ambiguous lineage.

Thus concluding, our study emphasized the significance of morphological diagnosis of acute leukemia by scrupulous examination of peripheral blood and bone marrow aspirate smears even in the era of immunophenotypic diagnosis.Also, we cannot understate the contribution of cytochemical studies, as they provide a cheaper alternative, in centres where flowcytometry cannot be done because of financial restrictions. But, again immunophenotyping has become indispensable in the present scenario and is a boon to the diagnosis of acute myeloid leukemia.