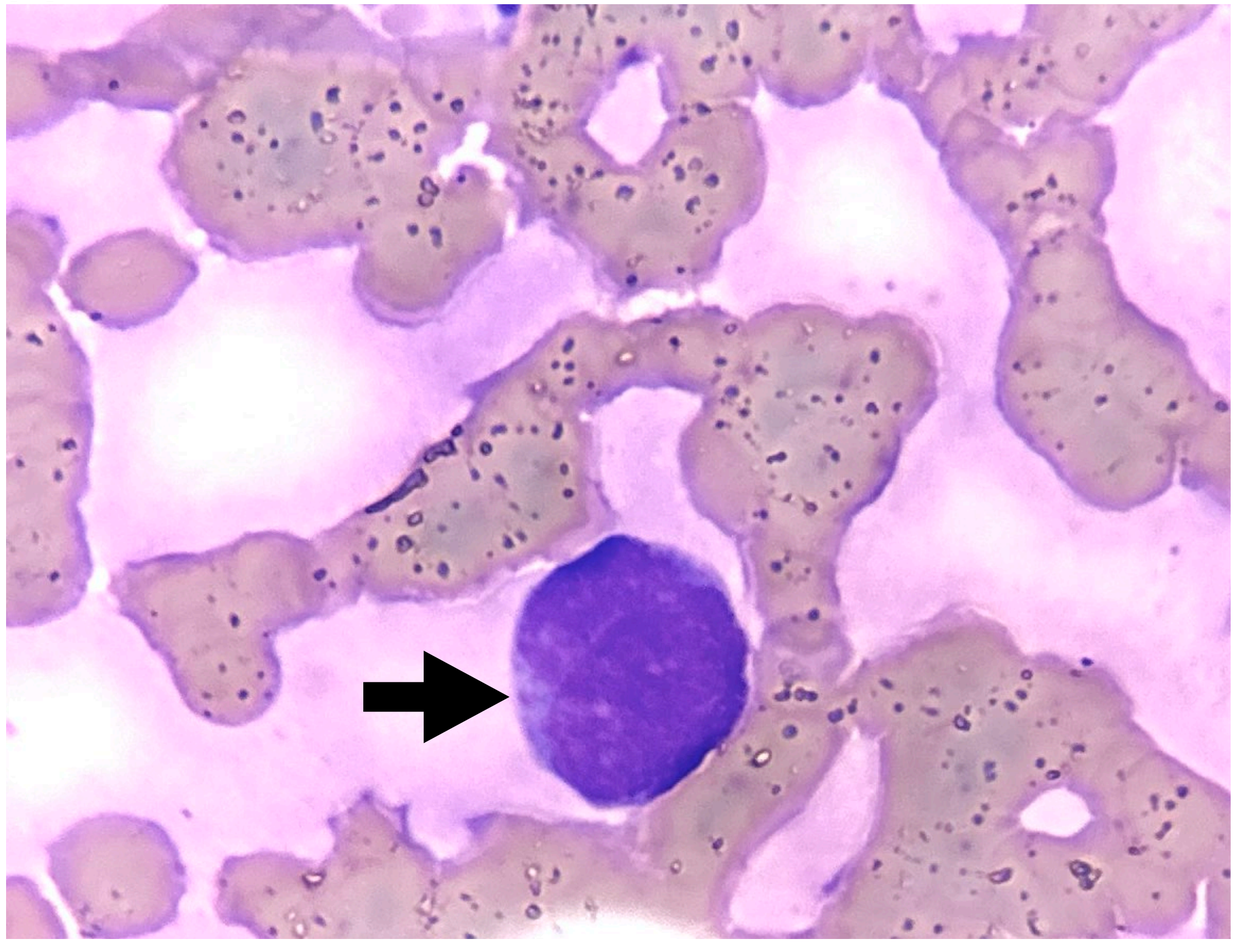
Peripheral smear

A



B

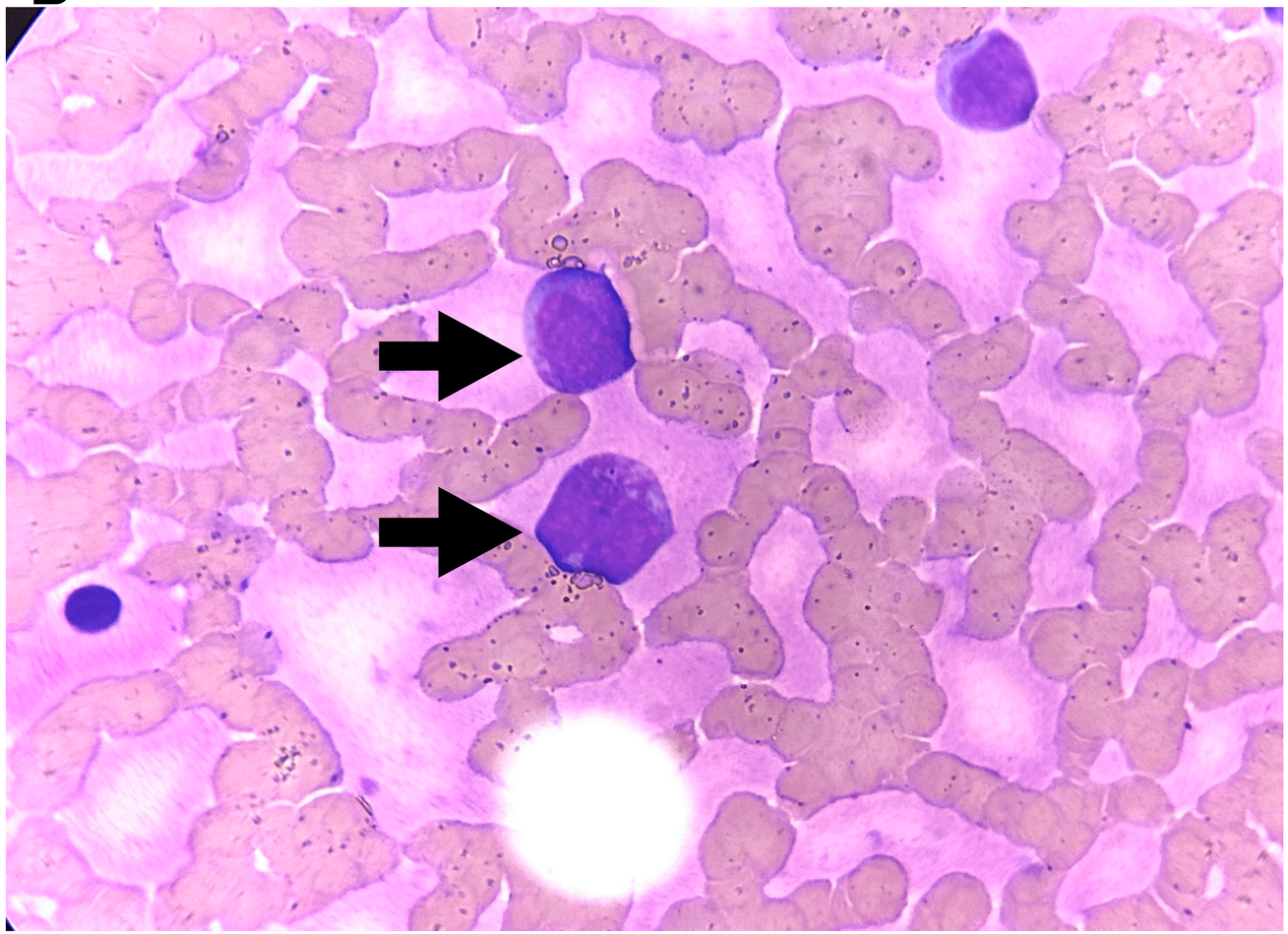
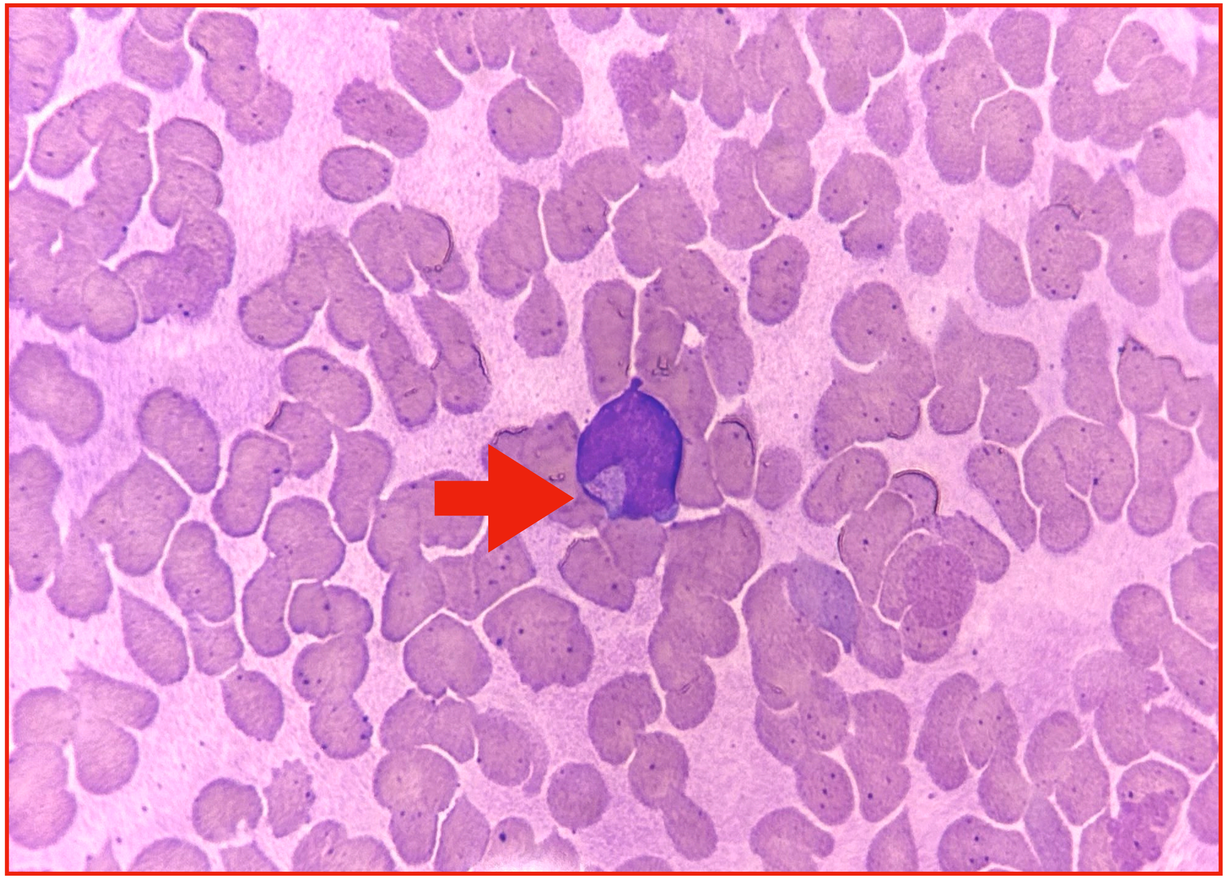


FIG (A - B) Black arrows- blast with bilobed cleaved nuclei with micro granules

Peripheral smear

C



D

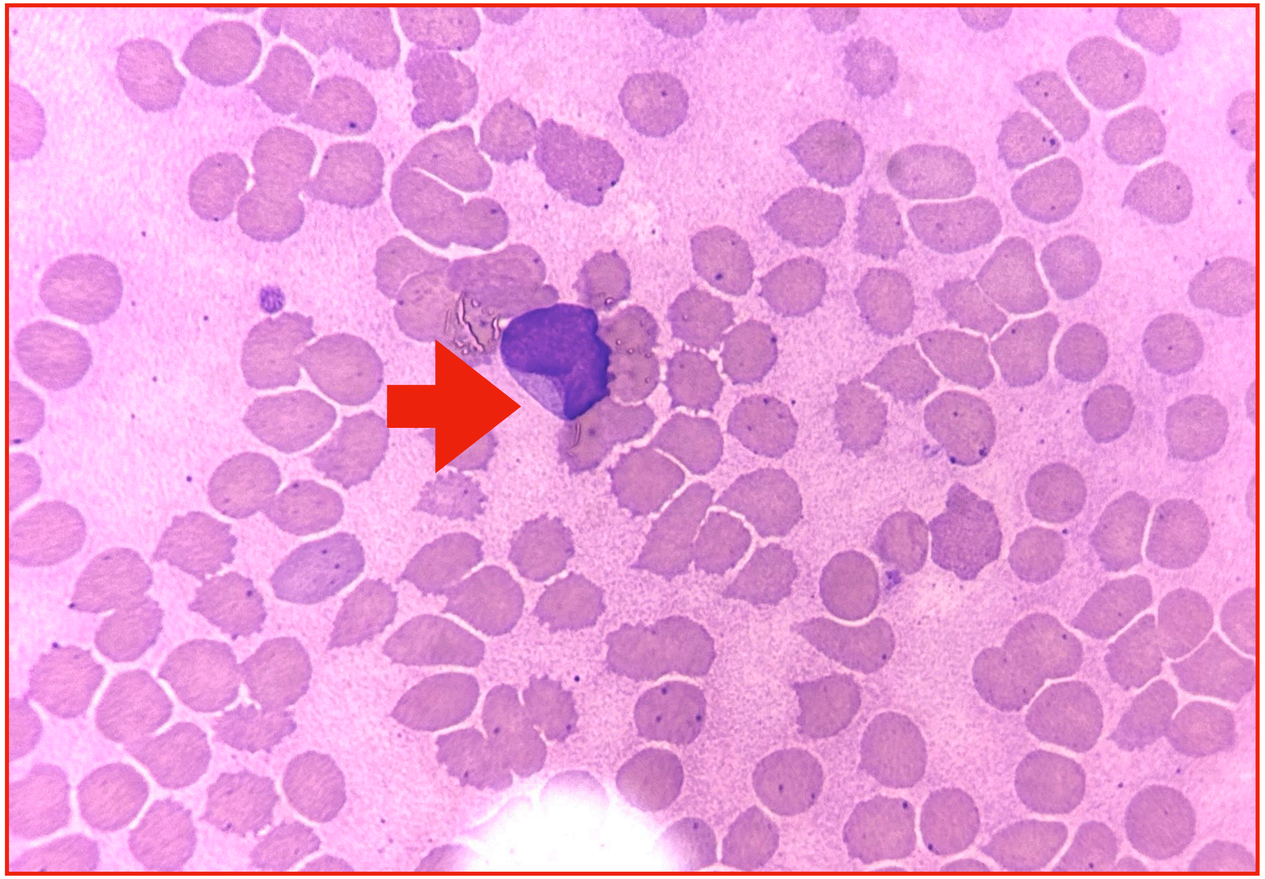


FIG (C- D) Red arrows- blast with cup shaped nuclei

Bone Marrow Aspirate

E

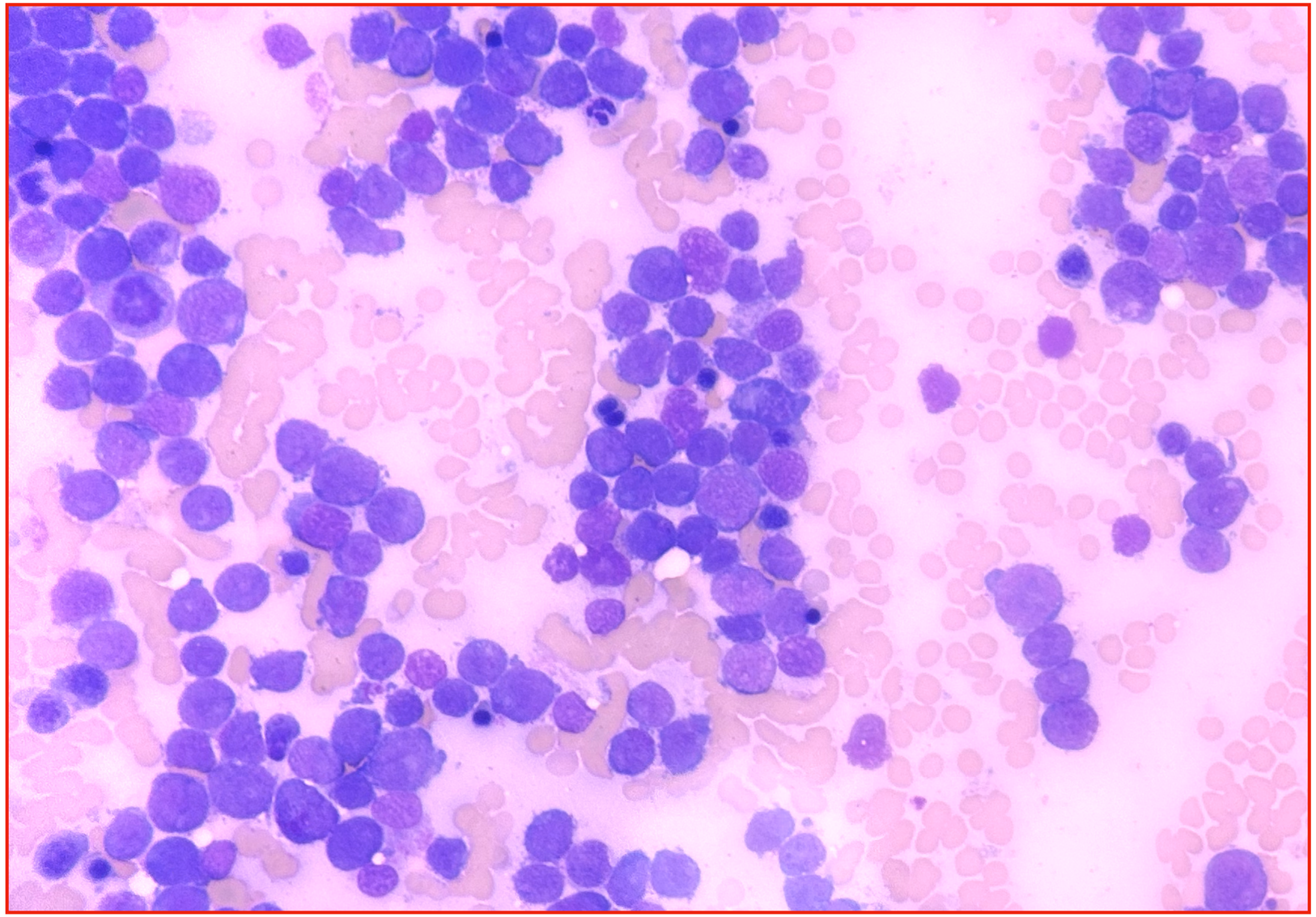


Fig E - Cellular aspirate with 90% Blasts

F

Trephine Biopsy

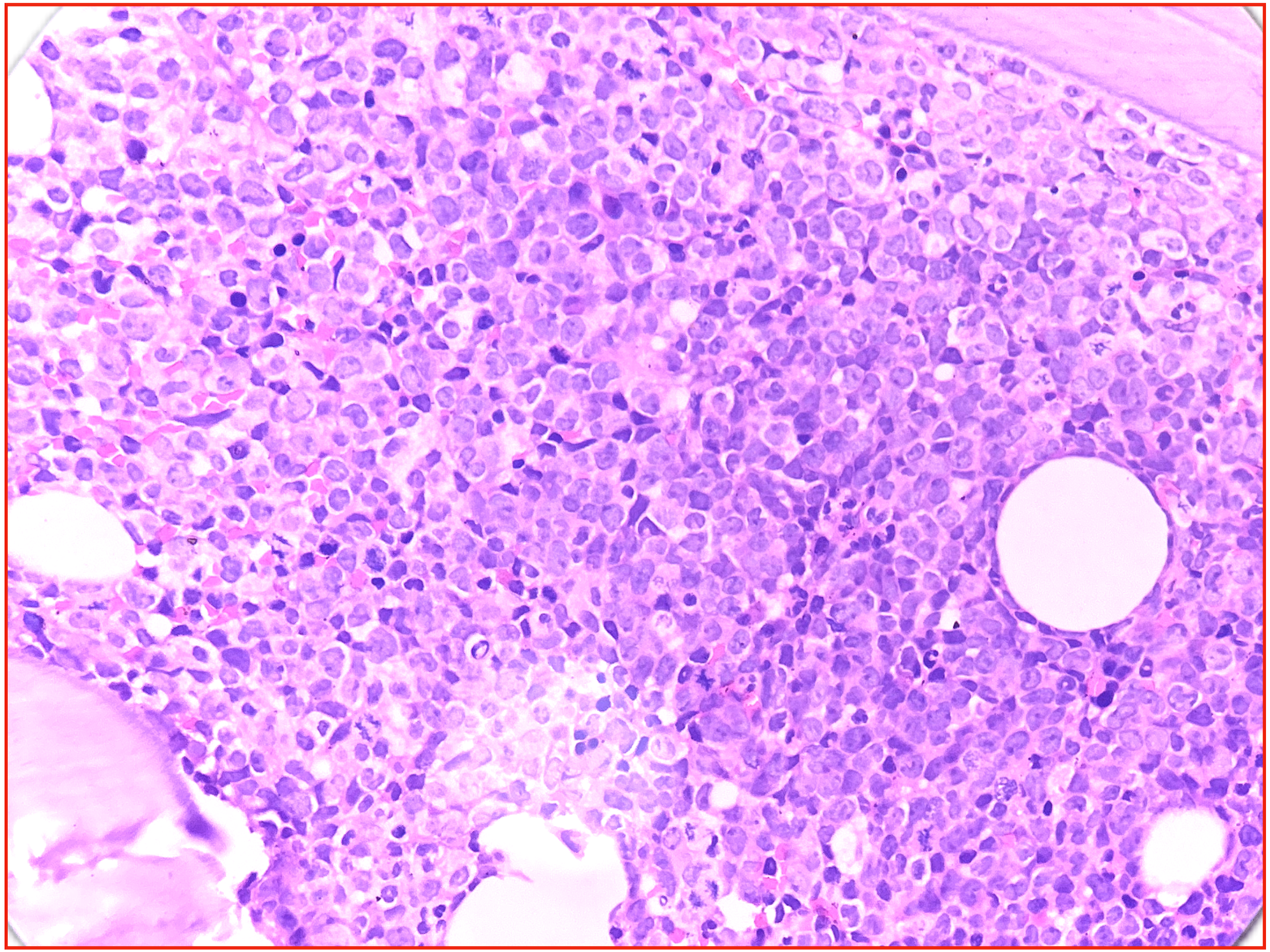
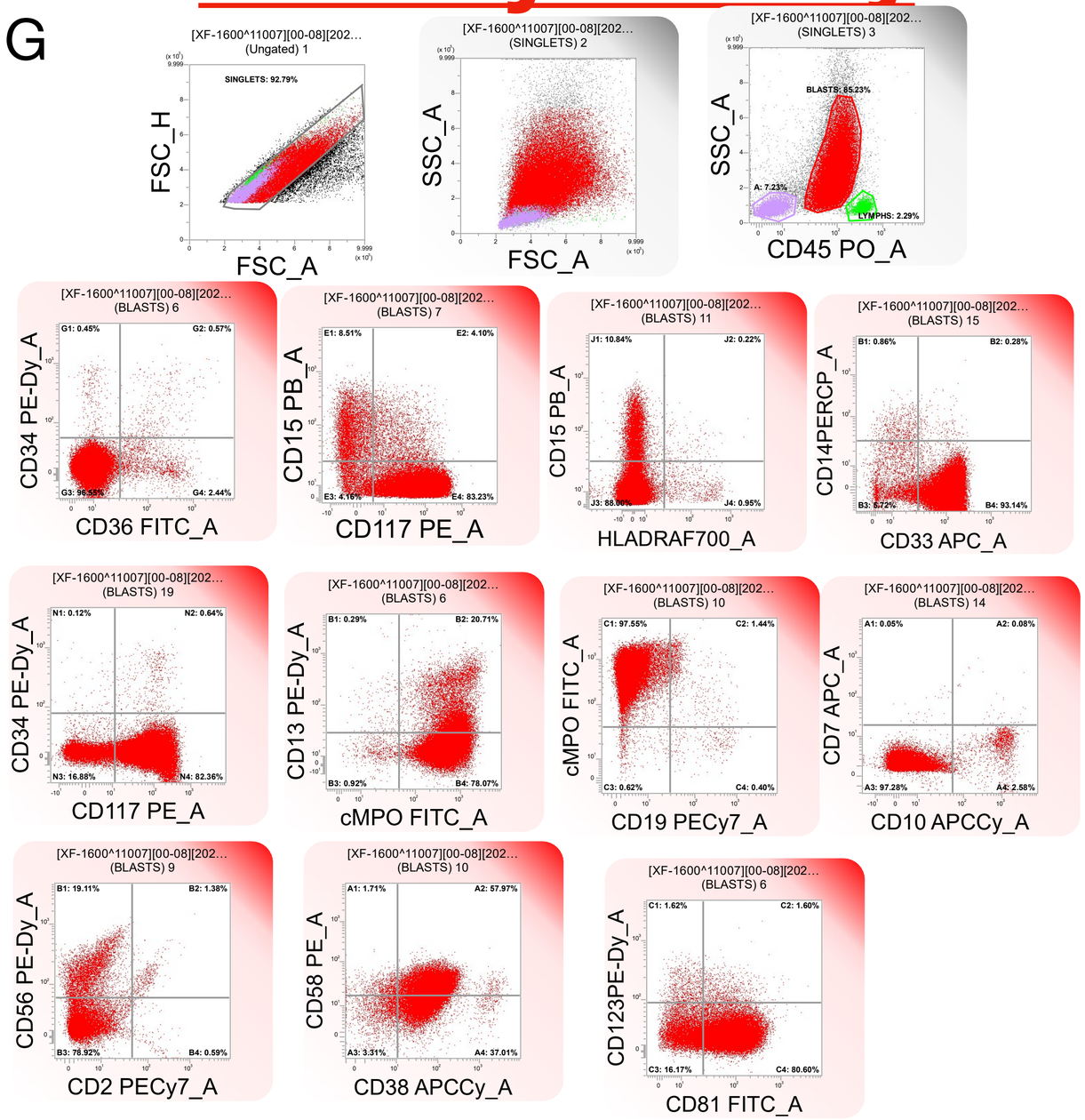


Fig F - Marrow biopsy completely replaced by blasts

Flow cytometry

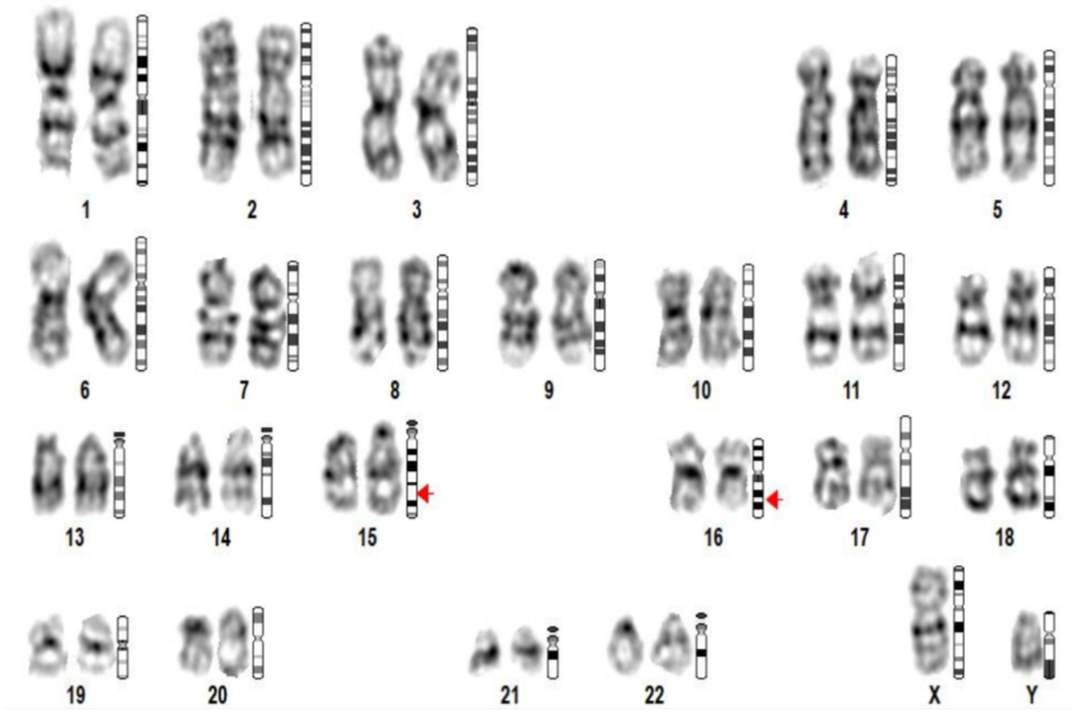
G



Chromosomal Analysis - Karyotyping

H

Karyotype- CG045



Karyotyping Results- ISCN 2020	**46,XY,der(15)(q24),del(16)(q22), [20]**

Interpretation:

- Chromosome G-banding was performed following standard protocols for Bone Marrow Aspirate.
- Cytogenetic analysis revealed gain on chromosome 15 at the q arm(15q24), resulting in a derivative chromosome, and loss of chromosome material at long arm of 16q22..

Recommendation:

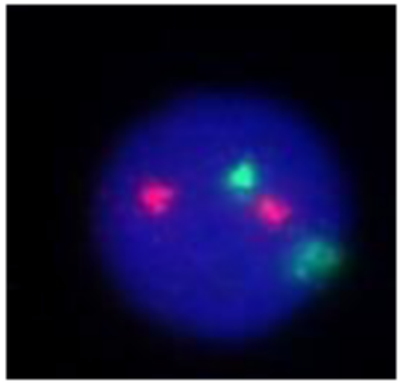
About 8% AMLs morphologically similar to APL, but lacking both t(15;17) by cytogenetics and PML-RARA by FISH and RT-PCR. compared with classic APML, exhibit variant/cryptic translocations, this leukemia often exhibit significant differences in malignant phenotype and sensitivity to treatment. They show different variant translocations involving PML, RARA and other partner genes PMID:24009642

Fluorescent in situ Hybridization (FISH) [ISCN 2020]

Sample Type	Clinical Indication	Test Requested	Method
BONE MARROW ASPIRATE	? HEMATOLOGICAL MALIGNANCY	PML/RARA dual color probe	FISH

Results Table

S.No.	Result (ISCN2020)	Chromosome Loci/Color	No.of Cells	Result
1	nucish (PMLx2),(RARA×2)	15q24.2(PML)-Red 17q21.1-q21.2(RARA)- Green	200/200	**NEGATIVE**



INTERPRETATION:

A dual-color dual-fusion FISH analysis performed on interphase cells using a probe for the PML gene on chromosome 15q22 and a probe for the RAR-alpha gene on chromosome 17q21; analysis of 200 interphase cells showed **NEGATIVE** for PML/RARA fusion in 100% cells analyzed.

NGS

J

Clinical History

Suspected case of acute myeloid leukaemia(AML).

Test Results and Interpretation Summary

PATHOGENIC MUTATIONS DETECTED in NPM1, IDH2, SRSF2, KRAS and NRAS genes

The patient is positive for mutation in NPM1, IDH2, SRSF2, KRAS, NRAS and FLT3(VUS) genes and is negative for other mutations and fusions tested. Please correlate with clinical features, CBC, bone marrow findings, immunophenotyping and cytogenetics for final conclusion.

Summary of Variants

SNVs

Gene	Variant Nomenclature	Location	Tier
NPM1 (NM_002520.7) VAF: 32.38%	c.863_864insCCTG p.Trp288CysfsTer12	Exon 11	1A
IDH2 (NM_002168.4) VAF: 41.95%	c.419G>A p.Arg140Gln	Exon 4	1A
SRSF2 (NM_001195427.2) VAF: 44.31%	c.284C>T p.Pro95Leu	Exon 1	2C
KRAS (NM_004985.5) VAF: 17.13%	c.175G>A p.Ala59Thr	Exon 3	2C
KRAS (NM_004985.5)	c.38G>A	Exon 2	2C