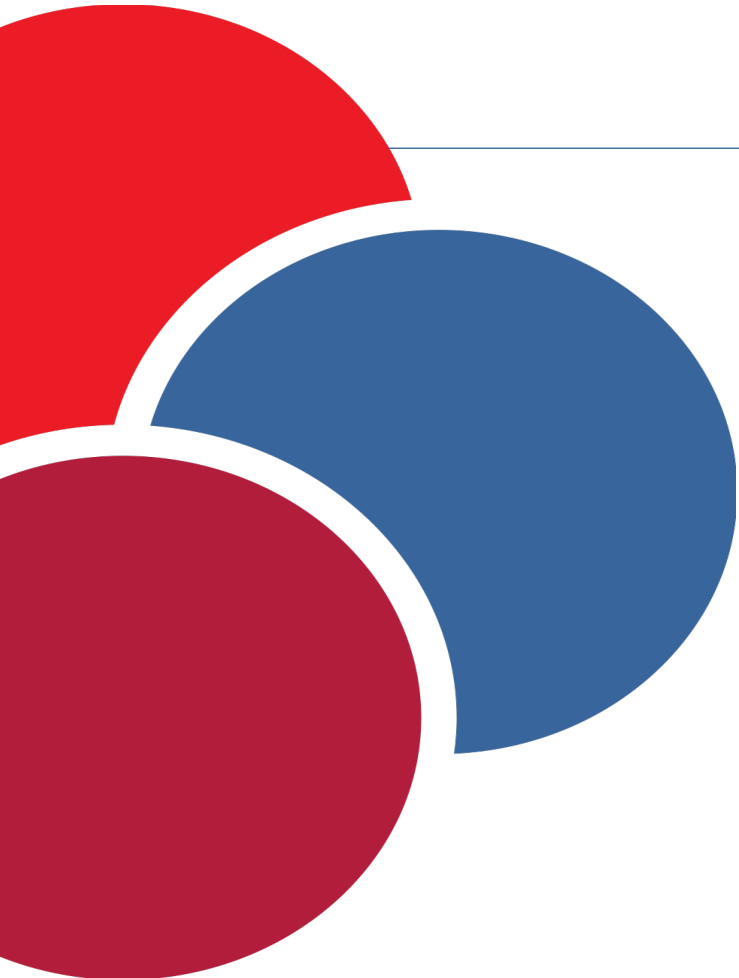




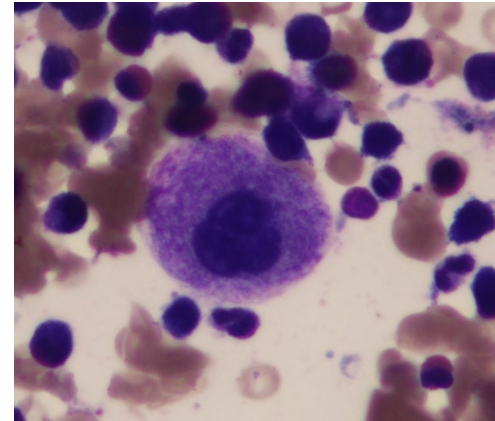
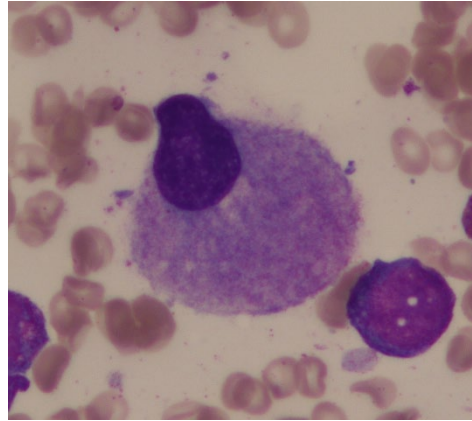
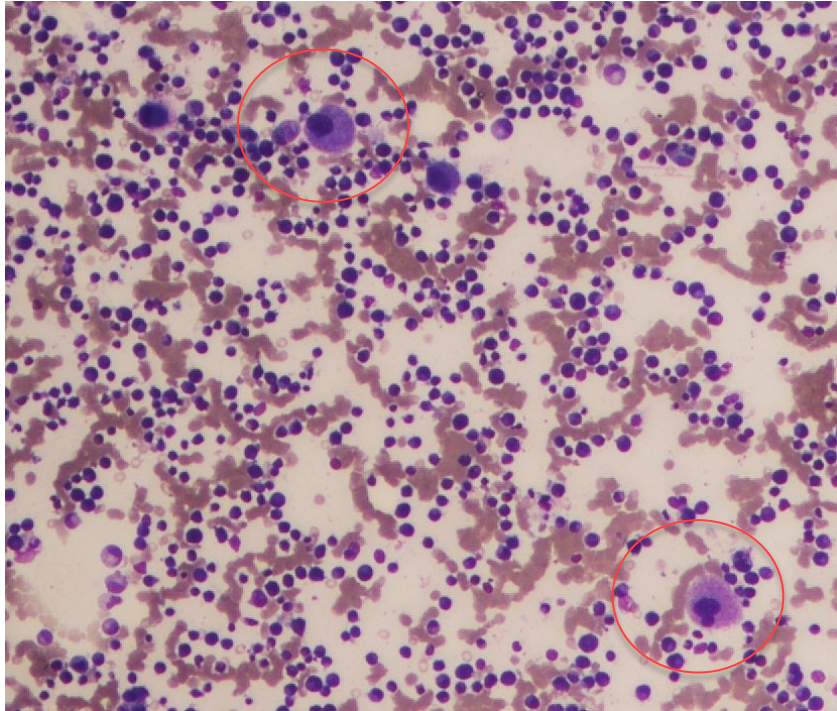
Case 5

Presented by Dr Katie Wickenden
Haematology ST6
University Hospitals of Leicester NHS
Trust

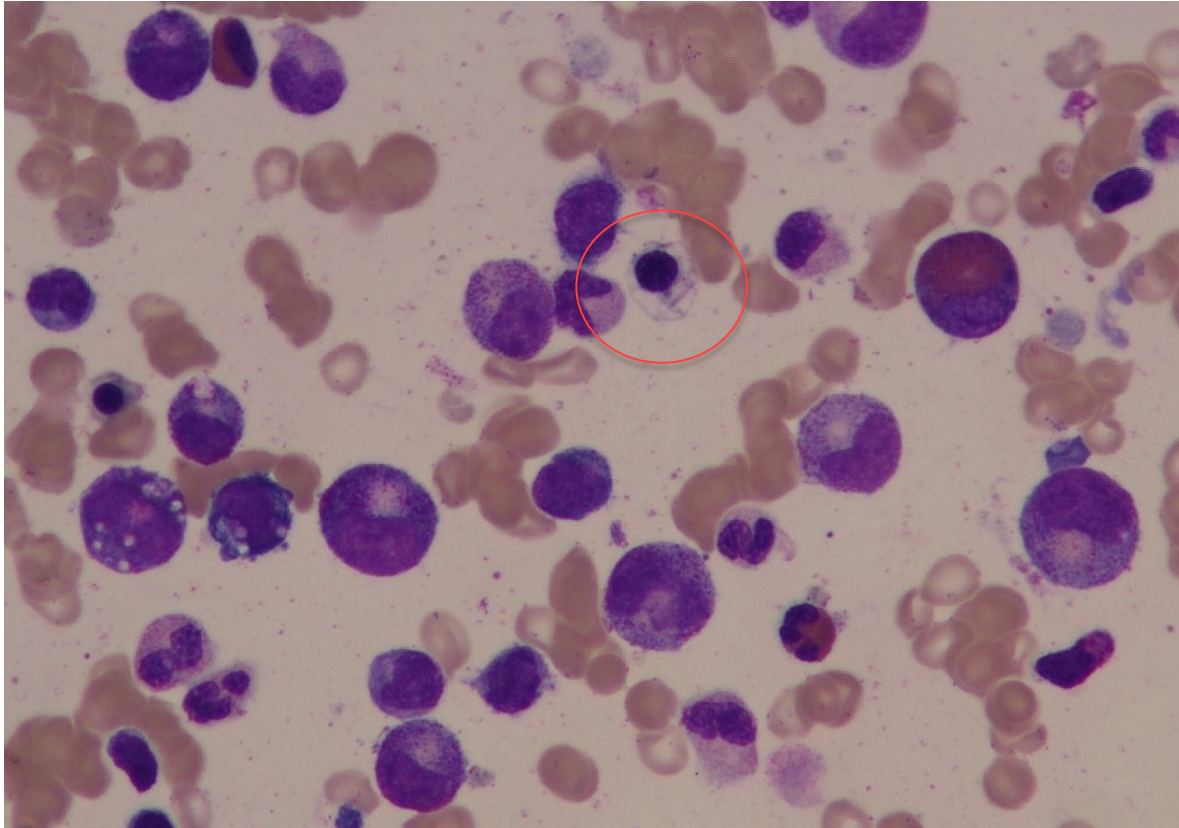
Case 5

- 83 year old male presenting with pancytopenia
- PMH: Non-Hodgkins lymphoma (DLBCL on background of follicular lymphoma)
- Haemoglobin 74 g/dL
- Platelet count $128 \times 10^9/L$
- White cell count $3.2 \times 10^9/L$
- Neutrophil count $0.37 \times 10^9/L$

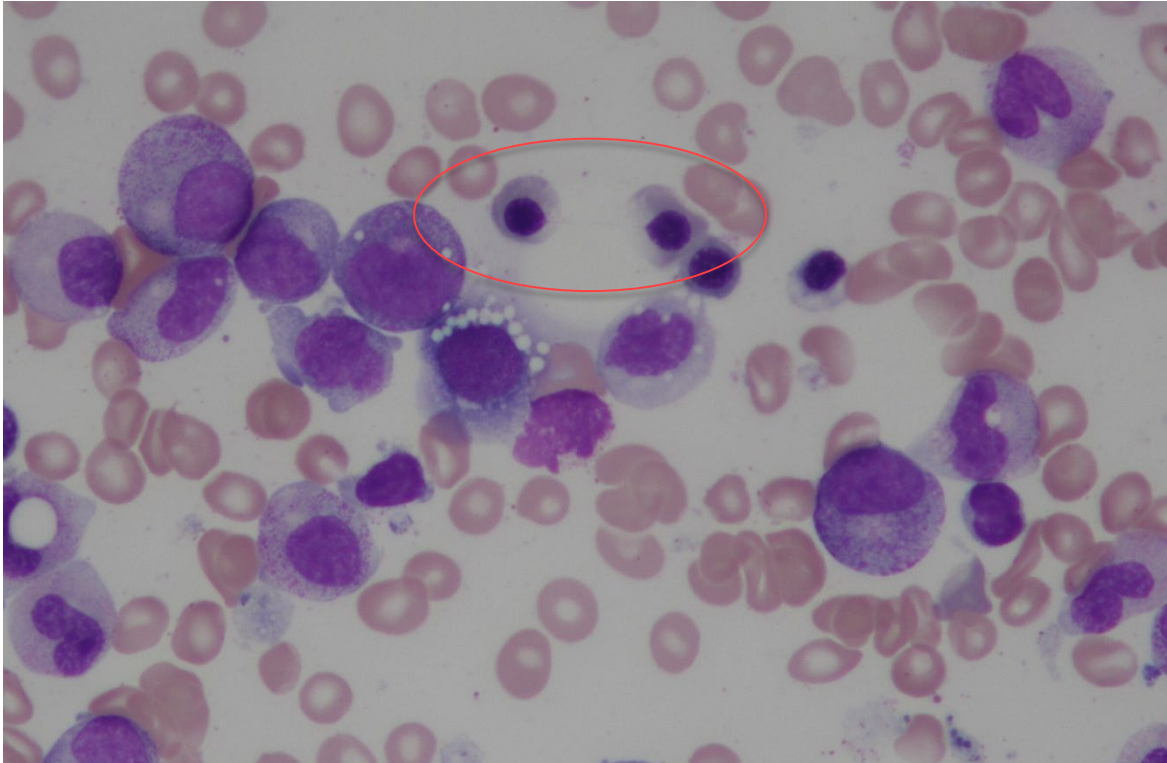
Bone marrow aspirate



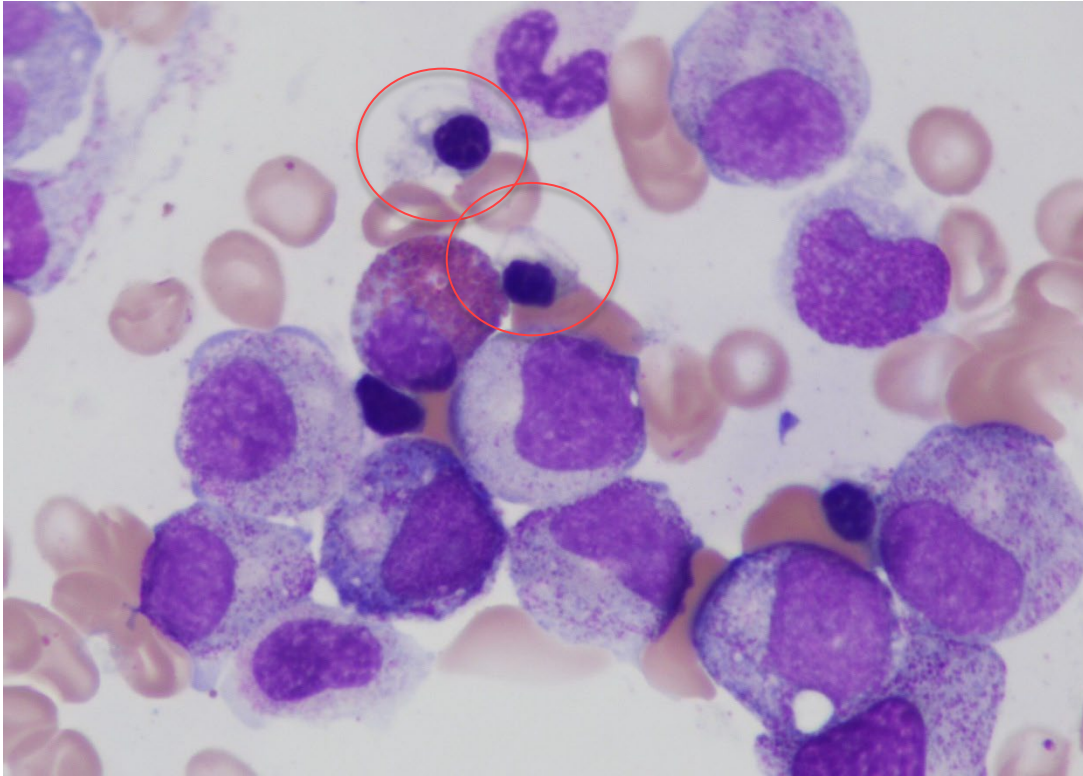
Bone marrow aspirate



Bone marrow aspirate



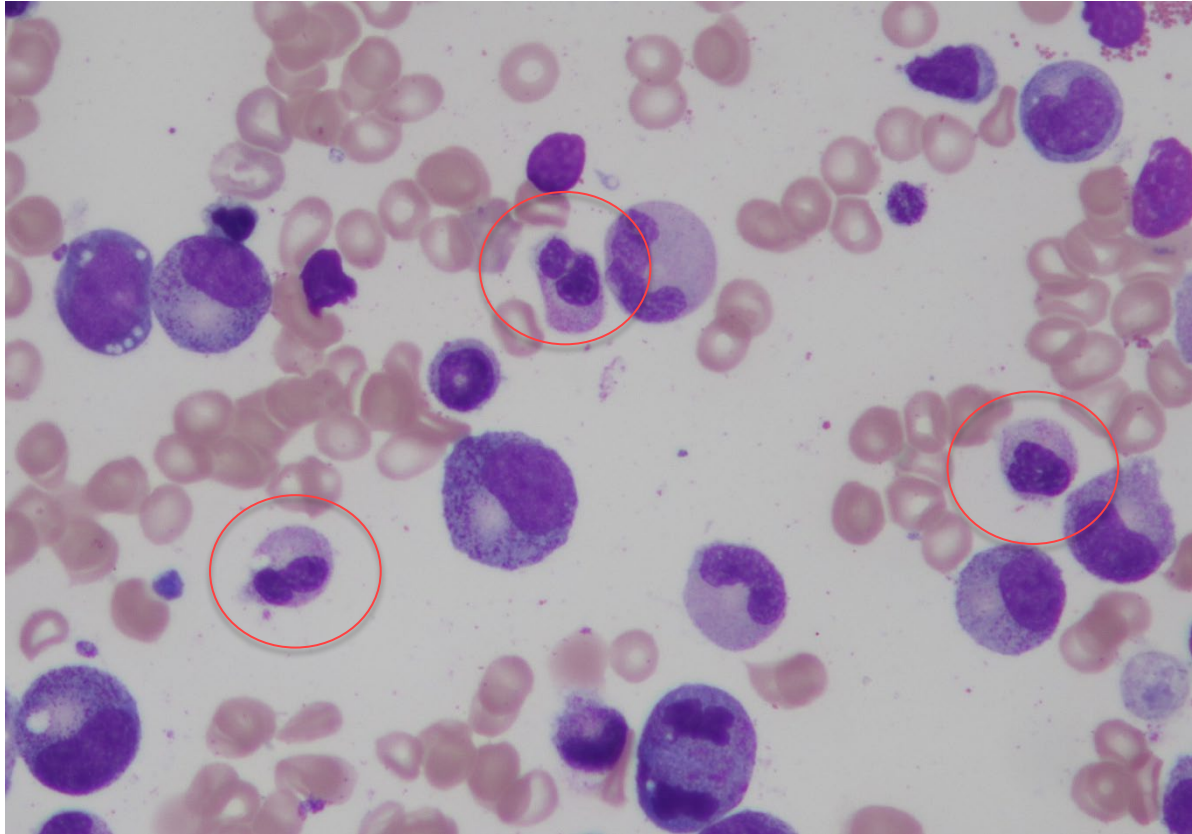
Bone marrow aspirate



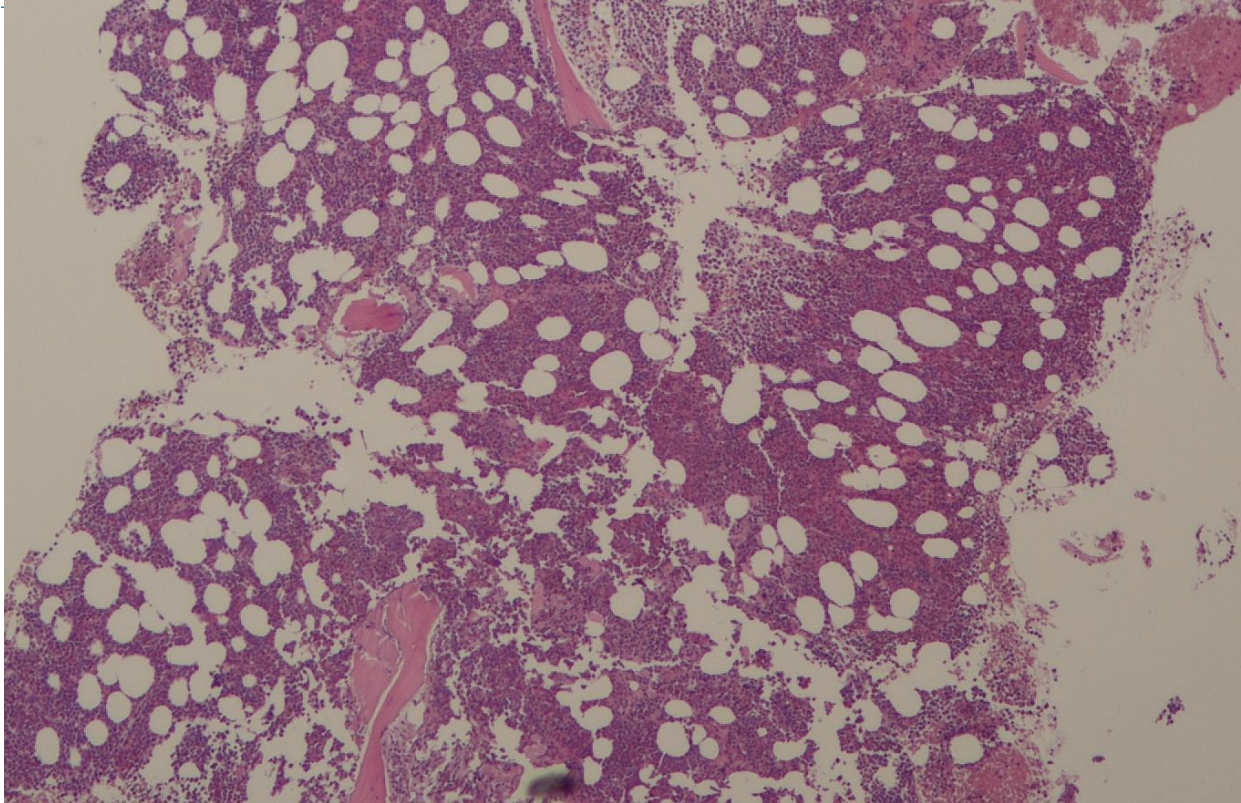
Marked erythroid
dysplasia



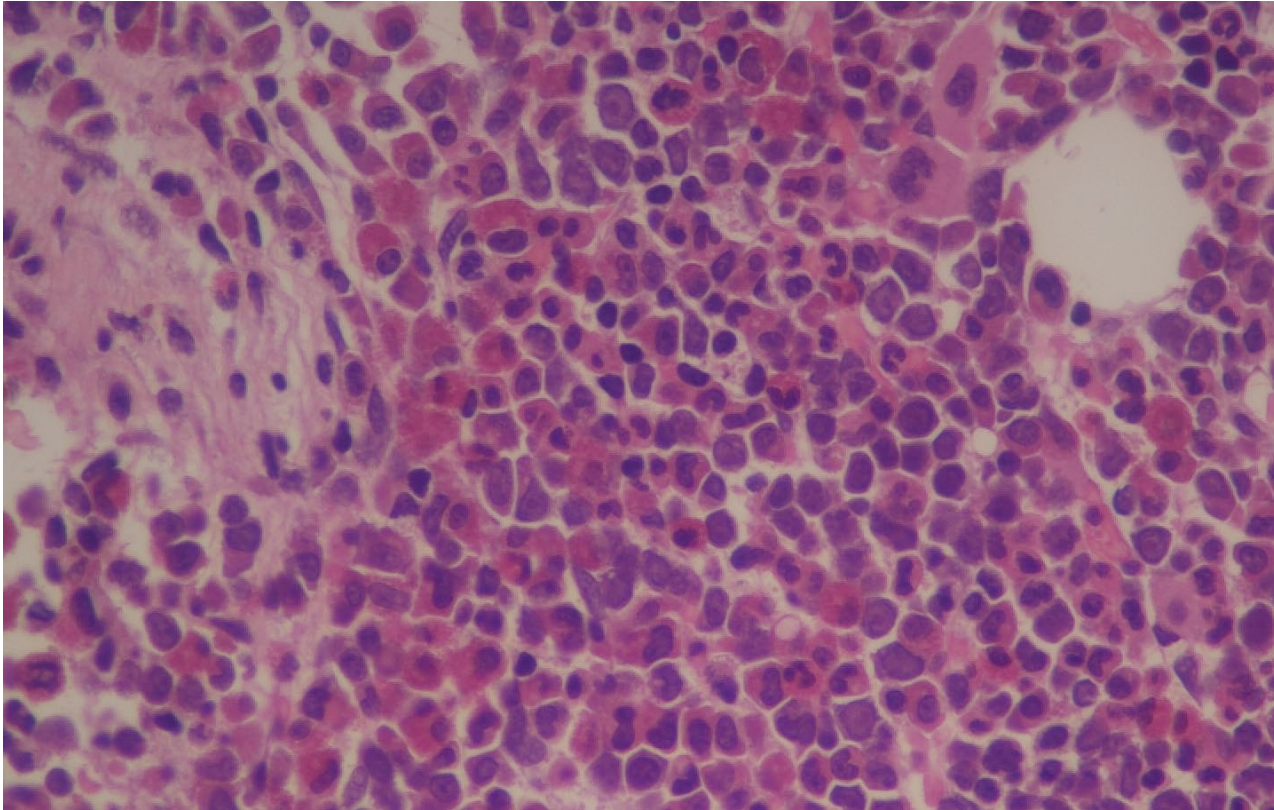
Bone marrow aspirate



Bone marrow trephine (low power)



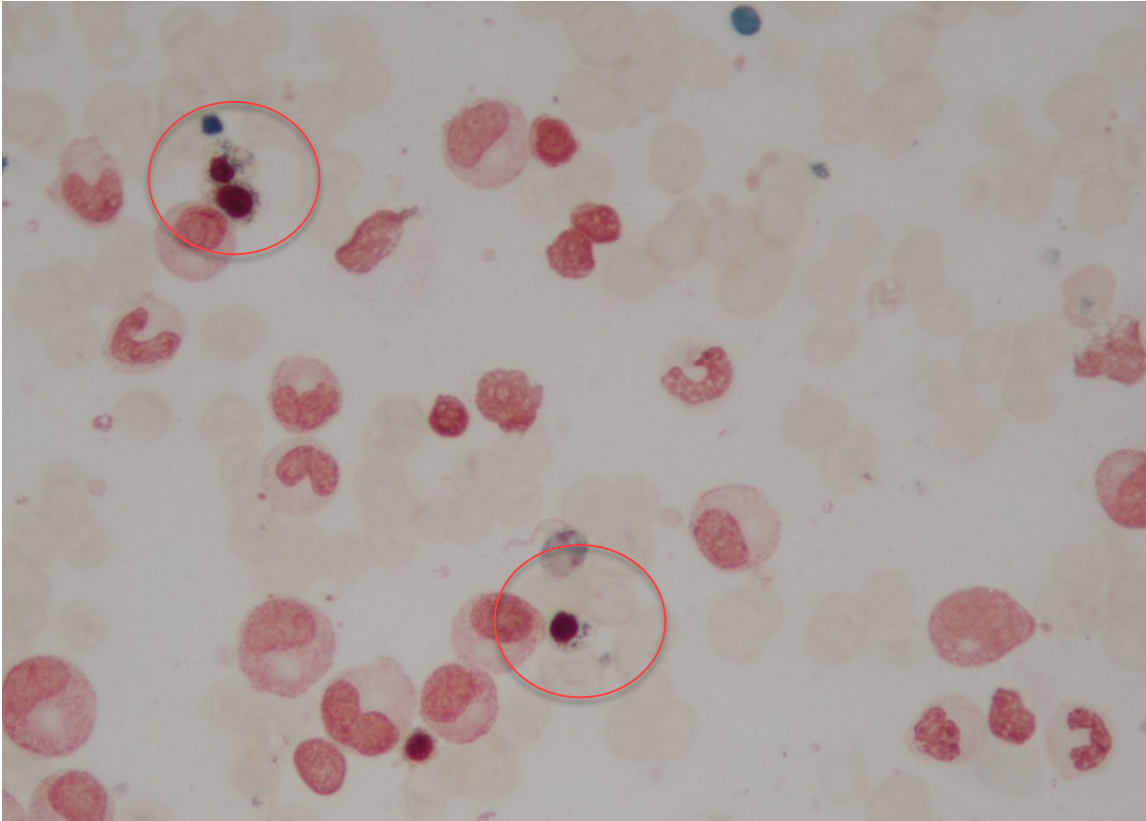
Bone marrow trephine (high power)



What further testing would you next request based on the morphology?

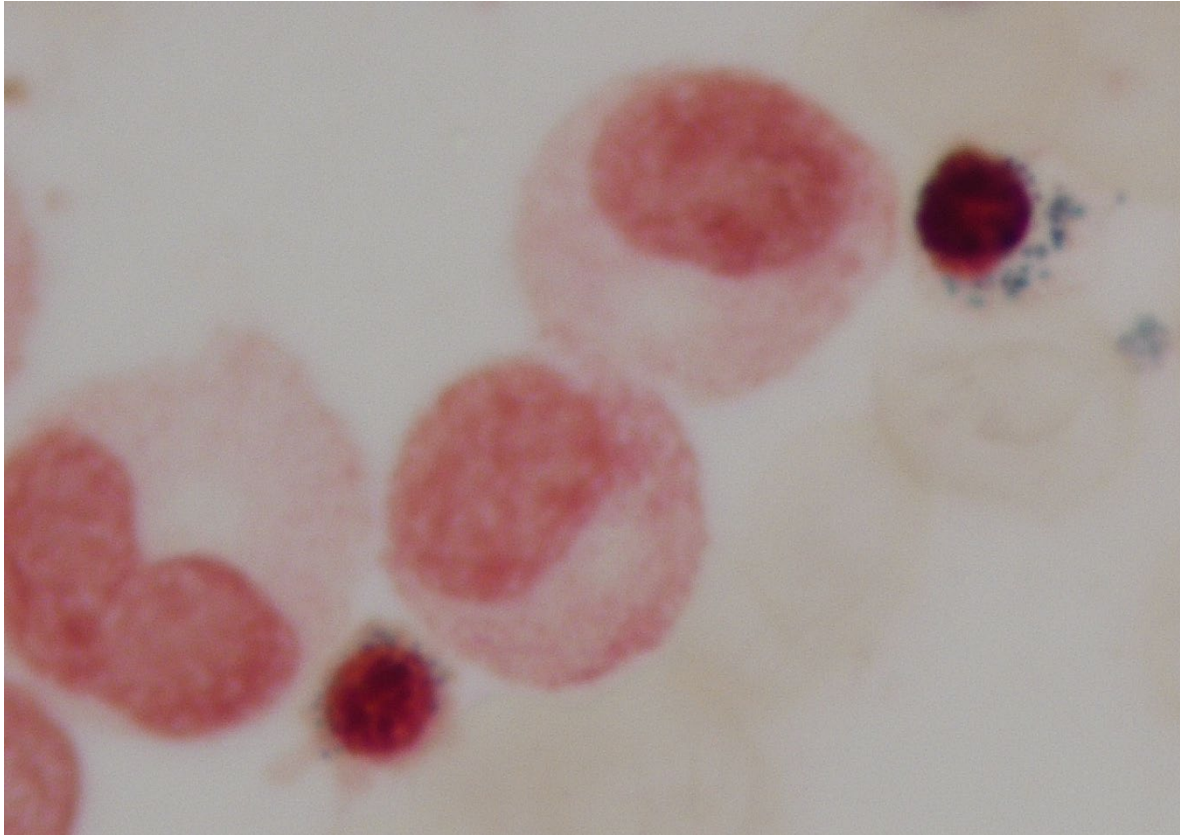
- a) Myeloid NGS panel
- b) Perls' stain on aspirate
- c) Karyotype
- d) FISH for BCR ABL
- e) Reticulin stain on trephine

Bone marrow aspirate (high power)



Perls' stain
demonstrating ring
sideroblasts at
>15%

Bone marrow aspirate (high power)



What cytogenetic or molecular abnormalities could you expect to find?

- a) Deletion of the long arm of chromosome 5
- b) BCR ABL
- c) SF3B1 mutation
- d) TP53 mutation
- e) ASXL1 mutation



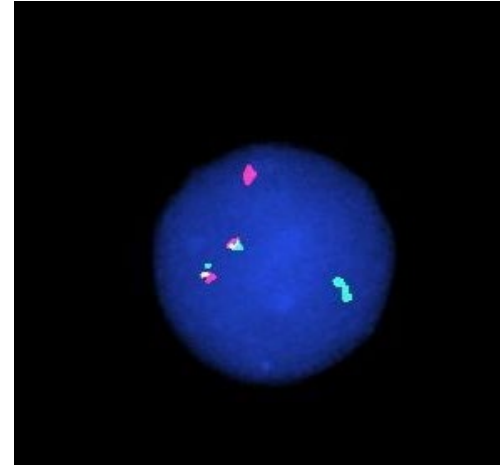
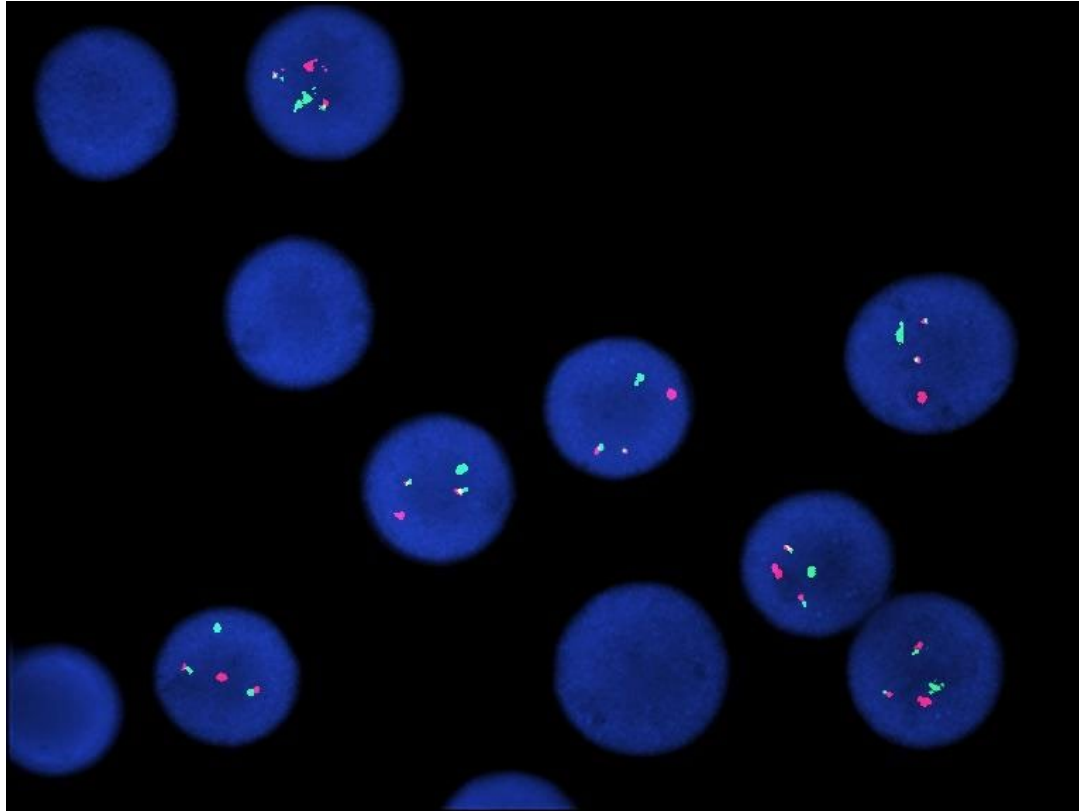
Molecular results

- No pathogenic or likely pathogenic variants detected by NGS myeloid gene panel
- Variant of uncertain significance (VUS) in MPL and NOTCH1

Cytogenetic results

- Del Y in all 10 cells
- One other abnormality, confirmed by FISH testing

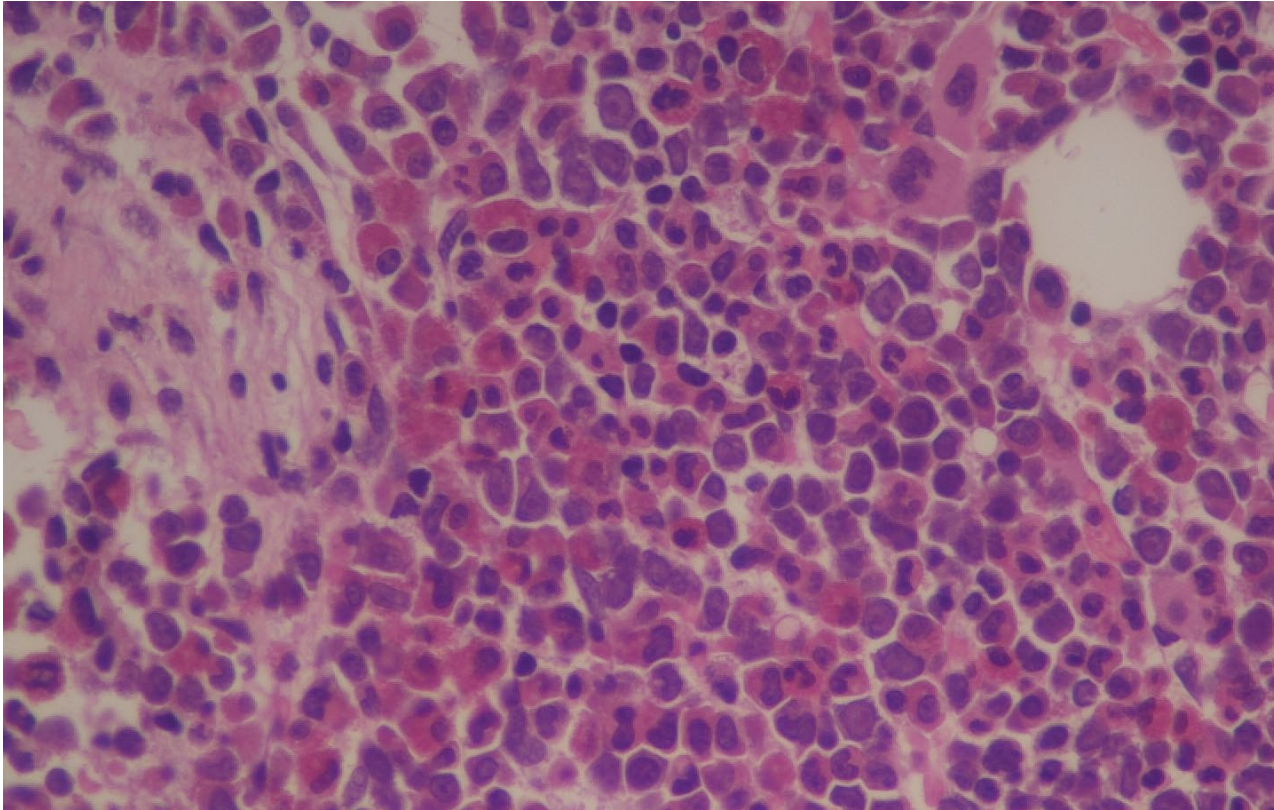
FISH *BCR ABL*



45,X,-Y,t(9;22)(q34;q11)[10]
BCR::ABL1 rearranged [92%] by interphase
FISH

*Images courtesy of Karen Marshall, department of
cytogenetics University Hospitals of Leicester.*

Bone marrow trephine (high power)



What is the final diagnosis?

- a) Therapy related myelodysplasia with multilineage dysplasia
- b) Myeloid neoplasm (myelodysplasia with multi-lineage dysplasia) post cytotoxic therapy (MN-pCT)
- c) MDS/MPN U
- d) MDS with low blasts and ring sideroblasts
- e) MDS with low blasts and SF3B1 mutation
- f) Chronic myeloid leukaemia

Diagnosis

- *'Likely therapy related myelodysplasia with ring sideroblasts and BCR::ABL1'*
- *WHO v4: Therapy related myelodysplasia with multilineage dysplasia.*
- *WHO v5: Myeloid neoplasm (myelodysplasia with multi-lineage dysplasia) post cytotoxic therapy*
- *ICC: Therapy related myelodysplasia with multilineage dysplasia*

Review of literature

- Keung et al (2004) undertook a retrospective study of 148 cases of t(9;22) **(1)**
 - 84% CML
 - 13% de novo ALL
 - 2% de novo AML
 - 3% MDS (*de novo and treatment related*)
- Chelapreddy et al (2018) presented a case and reviewed 22 case reports of Ph+ MDS **(2)**
 - 8 out of 15 cases (with data available) progressed to leukaemia
 - 8 patients received TKI, response variable
 - 1 patient had rising blast count on conventional chemotherapy but responded to imatinib

Literature & take home message

- A straight forward myelodysplastic neoplasm that wasn't what it seemed
- Rare cases of MDS with BCR ABL in the literature
- Prognostic implication of BCR ABL unknown but ?more likely to progress
- Role of TKI unknown

Acknowledgments

- Dr Angela Bowen (Northampton General Hospital)
- Dr Linda Barton (University Hospitals of Leicester)
- April Sellors (University Hospitals of Leicester)
- Karen Marshall (University Hospitals of Leicester)

References

1. [Philadelphia chromosome positive myelodysplastic syndrome and acute myeloid leukemia—retrospective study and review of literature – Keung et al - 2004 - Leukaemia Research](#)
2. [Philadelphia Translocation in MDS: A Case Report and a Brief Review of the Literature Looking at Its Prevalence, Disease Progression, and Treatment Options - Chelapareddy et al - 2018 - Case Reports in Hematology - Wiley Online Library](#)