Phase Ia PoM 2025-26: TALES FROM THE HAEMATOLOGY CLINIC: WHITE BLOOD CELLS

Case 1
Q1. Raised white blood cell count: raised neutrophils (neutrophilia), raised eosinophils (eosinophilia)
Q2. The white blood cells on the blood film are granulocytes, specifically neutrophils. As well as containing granules, the cytoplasm can be seen to contain vacuole ('vacuolation'), which can be seen in infection.
Clinical history and findings on blood count/film are suggestive of a chest infection
A raised eosinophil count can be seen in allergy/atopy, note patient history of asthma
Q3. Inflammatory markers e.g. CRP, Sputum culture, Urine antigen test e.g. *Streptococus pneumonia* (pneumococcus)

Case 2
Q1. Raised white blood cell count: raised lymphocyte count (lymphocytosis)
Q2. Answers as shown on next slide: the white cells are mononuclear, and are large lymphocytes (rather than monocytes which would have 'folded' nucleus and vacuolation)
The lymphocyte in the middle has intensely basophilic (blue) cytoplasm. The margins of the lymphocytes are scalloped and appear to be 'hugging' the surrounding red blood cells.
Q3. Viral infection: infectious mononucleosis
Q4. Confirm by testing for Mononuclear heterophile antibodies: 'Monospot' test or by looking for IgM antibodies to Epstein-Barr Virus (EBV)

Case 3
Q1. Raised white blood cell count: raised lymphocyte count (lymphocytosis)
Q2. Lymphocytes: Small with mature chromatin pattern
Q3. 'Smear'/'Smudge'/'Basket' cell: these squashed mature lymphocytes are characteristic of
Q4. Chronic Lymphocytic Leukaemia (CLL)

Case 4
Q1. Answers as shown on next slide: Lymphadenopathy (enlarged lymph nodes), Enlarged liver (hepatomegaly), Enlarged spleen (splenomegaly), Testicular swelling
Q2. Reduced Hb (anaemia),
Raised white blood cell count (flagged on analyser as Blast cells)
Reduced platelet count (thrombocytopenia)
Q3. Blast cells. These are recognised by: large size, high nucleus/cytoplasmic ratio, open chromatin pattern of nucleus, prominent nucleoli
The cytoplasm in these blast cells does not contain granules, suggesting that these are Lymphoblasts
Q4. Answers as shown on next slide
Q5. Acute Lymphoblastic Leukaemia (ALL)
Q6. Flow cytometry, Cytogenetic/Molecular analysis
Q7. Lymphoblasts infiltrate into the Central Nervous System (CNS), where they are protected from the systemic chemotherapy (known as a 'Sanctuary' site)

Case 5
Q1. Raised white blood cell count: raised neutrophils, monocytes, basophils and eosinophils
Q2. Answers as shown on next slide: increase in granulocytes —neutrophils, eosinophils and basophils and an increase in granulocyte precursors – myelocytes and metamyelocytes ('left shift')
Q3. Enlargement of the spleen (splenomegaly) and possibly enlargement of the liver (hepatomegaly)
Q4. See next slide: BCR-ABL1

Case 6 Acute Myeloid Leukaemia (AML) – answers as shown on the next 2 slides