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Peripheral Smear in Microcytic and Macrocytic Anaemia

Practical 04 / Spotter and viva

Aim

Recognise morphological patterns of microcytic and macrocytic anaemia and plan appropriate correlation.

Principle

Indices define average size and haemoglobin content. A representative film adds shape, size variability and white cell morphology.

Materials and Requirements

- Annotated microcytic and macrocytic teaching films
- CBC indices and supplied iron and vitamin results

Procedure

1. Read Hb and MCV using the stated patient context and laboratory interval.
2. Set up a case worksheet with Hb, haematocrit, MCV and any red cell distribution width supplied. Verify dates and check whether recent treatment or transfusion may affect the pattern.
3. Use the monolayer to compare cell size and central pallor and document anisopoikilocytosis.
4. Locate the monolayer at low power and then inspect several fields at the taught objective. Use nearby small lymphocyte nuclei for approximate size comparison where appropriate.

Continue with step 5 on the next page.

Procedure Continued

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5. Look for pencil cells or target cells in the microcytic example and macro-ovalocytes or neutrophil hypersegmentation in the macrocytic example.
6. Describe shape and pallor before suggesting a diagnosis. Compare the tendency toward a large central pale area in the microcytic example with large oval cells in the macrocytic example.
7. Scan sufficient fields for hypersegmented neutrophils or other white cell changes and record how often the characteristic forms occur in the inspected fields.
8. Relate film and CBC to supplied ferritin, inflammation markers or B12 and folate evidence as appropriate.
9. Write a morphology conclusion supported by two findings. Add the case's relevant iron or vitamin results and specify one missing result that would change the interpretation.

Precautions

• Avoid diagnosing deficiency from morphology alone.

• Interpret ferritin in the context of inflammation.

Observations and Interpretation

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Observations and Record

Item	What to record	What it tells you
Cell size and pallor	MCV, central pallor and variation	Supports the descriptive category
Distinctive feature	Pencil cells, target cells or macro-ovalocytes	Guides the differential
Corroboration	Relevant iron or vitamin test	Supports cause assessment

Worked Example

Low MCV, hypochromia and low ferritin support iron deficiency in a fictional case. Similar microcytosis with different iron studies requires a broader differential.

Result and Interpretation

Present the morphological category, supporting features and one confirmatory or discriminating test.

Viva Questions and Answers

Why inspect white cells in macrocytosis?

Hypersegmented neutrophils can support a megaloblastic pattern.

Can thalassaemia trait cause microcytosis?

Yes. The CBC, iron results and haemoglobin analysis help distinguish it.

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