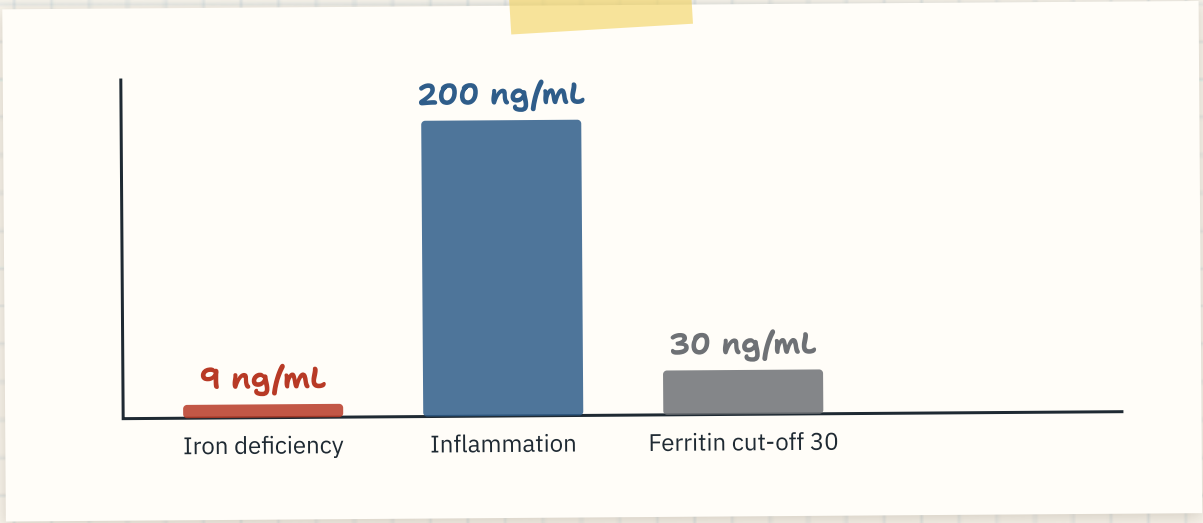
Microcytic anaemia: 4 causes

Sort small red cells by the iron fingerprint



Step by step

1. Microcytic = MCV below 80 fL
2. Ferritin and TIBC sort iron deficiency from inflammation
3. High iron everywhere: think sideroblastic
4. Normal iron studies: think thalassaemia trait

Cause	Iron studies
Iron deficiency	Ferritin < 30 ng/mL; TIBC high
Inflammation	Iron low; ferritin N/high; TIBC low/N
Sideroblastic	Iron, ferritin, TSAT high
Thalassaemia trait	Iron studies normal

Iron fingerprints

MENTZER INDEX

MCV / red cell count

under 13 favours thalassaemia over iron deficiency; a rough screen

Four ways to fail

Iron absent: deficiency
Iron locked: inflammation
Iron unusable: sideroblastic
Globin unbalanced: thalassaemia

Exam traps

- Low serum iron occurs in both iron deficiency and inflammation: use ferritin and TIBC.
- Ferritin is an acute-phase reactant, so it can be normal or high in inflammation.
- Mentzer index is only a rough screen; HbA_2 and iron studies are the reference.
- Alpha-thalassaemia trait generally has a normal HbA_2.

Microcytic anaemia: four causes, four iron fingerprints

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/haematology-oncology/microcytic-anaemia

For exam study only, not medical advice. Follow local guidelines and your lab's ranges.
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