Hypochromic microcytic anaemias and Thalassemia

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Q 2. What are the main causes of iron deficiency?

1. Iron intake is inadequate for needs e.g/growth requirements or during pregnancy
2. Malabsorption
3. Increased loss of iron due to gastrointestinal or uterine blood loss
4. Urinary loss of haemosiderin as a result of chronic intravascular haemolysis
5. All of the above

Q 3. Which of the statements are true in iron deficiency?

1. Morphological changes are not usually marked until the haemoglobin
falls below 100-110 g/L
2. Elliptocytes/ elongated /pencil cells / Teardrops and polychromasia are sometimes are present
3. Target cells are often present but less than B Thalassemia
4. Hypochromia and microcytosis in different degrees
5. All of the above F

Q4. The earliest evidence of iron deficiency is an increase in the RDW, followed by a fall in the Hb, RBC, Hct, MCH and the MCV

1. True A
2. False

Q5. Which red cell indices is quoted as being the most sensitive indicator of iron deficiency?

1. Hb < 100 g/L
2. MCV < 80 fl
3. MCH <26pg C
4. MCHC < 340 g/L
5. RCC < 3.5 x10/12 per L

Q6. Which of the following statements about patients with iron deficiency are true?

1. Can have high and low platelet counts.
2. Leucopenia and thrombocytopenia can be present
3. Hypersegmented neutrophils are sometimes present and are not necessarily indicative of coexisting B12/ folate deficiency
4. An eosinophilia due to hookworm may suggest iron deficiency
5. All of the above

Q7. Functional iron deficiency (insufficient iron availability despite sufficient ferritin and storage iron in the BM) can be recognised by automated analyser measurements such as % HRC, CHr, Ret-He, %Hypo-He, LHD% at various levels.

1. True
2. False

Q8. What are the differential diagnoses for iron deficiency?

1. Thalassemia trait, anaemia of chronic disease, Sideroblastic anaemia, lead poisoning A
2. Thalassemia trait. Anaemia of chronic disease, Sickle cell disease
3. Anaemia of chronic disease, B thalassemia major, Alpha Thalassemia 3 gene deletion.
4. None of the above

Q9. The soluble transferrin receptor assay is helpful in determining if someone is iron deficient or have anaemia of chronic disease plus iron deficiency.

1. True
2. False B

10. In complicated cases the definitive test for iron deficiency is the demonstration of absent bone marrow stores.

1. True A
2. False

Q11. Which of the following statements are true in anaemia of chronic disease?

1. Due to chronic infection or inflammation
2. Due to Malignant disease
3. Has normal or reduced soluble transferrin receptors
4. Has shortening of red cell survival
5. Increased rouleaux, background staining and a raised CRP maybe a morphological feature.
6. All of the above F

Q12. Which of the following features can be seen in anaemia of chronic disease?

1. Neutrophilia. Thrombocytosis and increased rouleaux.
2. Pencil cells/ elongated/elliptocytes, target cells, basophilic stippling.
3. Hypochromia and microcytosis.
4. None of the above
5. A, B and C

Q13. Further tests which help to diagnose anaemia of chronic disease include ESR, CRP. serum albumin concentration, fibrinogen, α macroglobulin and γ globulins.

1. True T
2. False

Q14 Congenital sideroblastic anaemia may show the following features.

1. A dimorphic picture
2. Uniform microcytosis and hypochromia.
3. Target cells, basophilic stippling, pappenheimer bodies.
4. Nucleated red cells, leucopenia, thrombocytopenia.
5. All of the above

Q15. Acquired sideroblastic anaemia is usually characterised by predominantly normocytic or macrocytic cells with only a small population of hypochromic microcytic cells.

1. True A
2. False

Q16. Lead poisoning morphologically can be microcytic, hypochromic or normocytic, normochromic with some polychromasia. Coarse basophilic stippling is often prominent. Lead poisoning and iron deficiency often coexist.

1. True A
2. False

Q17. Β thalassemia trait blood film usually has a marked microcytosis but the blood film may or may not show hypochromia in addition to the microcytosis. Target cells, elliptocytes, irregularly contracted cells and basophilic stippling can all be seen to varying degrees.

1. True A
2. False

Q18. In Β thalassemia trait the RDW is usually normal but when the patient becomes anaemic the RDW begins to fall.

1. True
2. False B

Q19. The best fit features seen in patients with β thalassemia major (untreated) are

1. Mild anaemia, target cells, teardrop cells, elliptocytes (elongated), schistocytes, hypochromia, microcytosis, basophilic stippling, pappenheimer bodies and nucleated red cells.
2. Severe anaemia, target cells, teardrop cells, elliptocytes (elongated), schistocytes, hypochromia, microcytosis, basophilic stippling, pappenheimer bodies and nucleated red cells. B
3. Severe anaemia, target cells, teardrop cells, elliptocytes (elongated), schistocytes, hypochromia, microcytosis, basophilic stippling, pappenheimer bodies and rare nucleated red cells.
4. Severe anaemia, target cells, teardrop cells, elliptocytes (elongated), schistocytes, hypochromia, microcytosis, basophilic stippling, pappenheimer bodies and echinocytes.
5. None of the above

Q20. The picture is most likely one of

1. Β thalassemia trait
2. α thalassemia trait
3. δβ thalassemia trait
4. Β thalassemia major post splenectomy



Q 20. In the same picture as the previous question what is the most likely inclusions in the arrowed cell.

1. Howell Jolley bodies
2. Pappenheimer bodies
3. Precipitated α chains
4. Malaria
5. Diplococci

Q 21. Patients with severe disease as a result of compound heterozygosity for Hb E and β Thalassemia are distinguished from thalassemia major by HPLC or haemoglobin electrophoresis.

1. True
2. False

Q 22. In adults α thalassemia diagnosis should be suspected when a subject of an appropriate ethnic group who is not iron deficient has indices suggestive of Thalassemia trait with abnormal HPLC or Hb electrophoresis and a raised haemoglobin A2 percentage.

1. True
2. False B

Q 23.Hb Bart’s hydrops fetalis is a syndrome resulting from an absence of 3 α genes. This results in severe anaemia, extramedullary haemopoiesis and hypalbuminaemia, causing stillbirth or early neonatal death.

1. True
2. False B

Q 24. Haemoglobinopathies (including thalassemia) result from mutations in the genes encoding the α, β, γ and δ chains of Hb. Mutations of α genes produce abnormalities affecting haemoglobins A, A2 and F. β genes affect Hb A, mutations in γ genes Hb F and δ genes Hb A2.

1. True
2. False B

Q 25. A typical blood film of sickle cell anaemia shows varying degrees of the following features

1. Anisocytosis, anisochromasia, sickle cells,
2. Boat shaped cells, target cells, polychromasia
3. Basophilic stippling, NRBC,
4. Irregularly contracted cells and spherocytes.
5. All of the above E

Q 26. A complication of sickle cell anaemia with parvovirus B19 infection results in white cells and platelets rarely affected; there is a disappearance of both NRBC and polychromasia and the reticulocyte count is very low. On recovery the NRBC increase and WBC, neutrophil count and reticulocyte count all rise.

1. True A
2. False

Q 27. Diagnostic tests for sickle cell anaemia and other forms of sickle cell disease are recommended in all neonates ( via Guthrie spots)of appropriate ethnic origin since early parenteral education, appropriate vaccinations and prophylactic penicillin therapy significantly reduce mortality.

1. True A
2. B False

Q 28. Sickle cell/ β thalassemia (βˢ β˚) show more microcytosis and hypochromia than in usual sickle cell anaemia and pappenheimer bodies maybe more prominent.

1. True A
2. False

Q 29. The diagram below is a blood film of haemoglobin C disease. What are the arrowed cells called?

1. Target cell
2. Bite cell
3. Irregularly contracted cell C
4. Spherocyte
5. Blister cell



Q 30.