Hereditary spherocytosis (H.S):

-Its ***autosomal dominant*** diseases. although 25 %of cases have no family history and represent new mutation.

-**Pathogenesis:** Defect in the main structural membranes proteins involved in the cell vertical interactions between membrane skeleton and lipid bilayer of the red ***(Ankyrin, spectrin and pallidin)***

- The defects are either quantitative (deficiency) or qualitative (dysfunction).

These defects lead to release of parts of the lipid bilayer of the membrane that are not supported by the skeleton. The ratio of surface area to volume will decrease and the cells become more spherical to maintain their contents.

The spherocytes become trapped in the red pulp of the spleen because they lack the deformability necessary to enable them to pass through the splenic microcirculation where they die.

The bone marrow produce red cells of the normal biconcave shape but these lose membrane as they circulate through spleen and rest of reticulo-endothelial system the spleen splenectomy, therefore play a central role in this disorder, so following survival of red cells returns to the normal.

Clinical features;

- The inheritance is autosomal dominant with variable expression. Rarely may it be autosomal recessive.
- The anemia may be present at any age from infancy to old age.
- Most of patient are an a symptomatic compensated chronic hemolytic state with spherocytes present in blood film, Reticulocytosis and hyperbilirubinaemia.
- Jaundice is typically fluctuating.
- Splenomegaly occurs in most patients.
- Pigmented gall stones are frequent and present in up to 50 %of patients .

Clinical course may be complicated by crises:

1-Haemolytics crises: Occur when the severity of haemolysis increase this is rare and usually associated with infections.

2-Megaloblastic crises: follows the developments of folates deficiency , this may occur as a first presentation of the disease in pregnancy.

3- A plastic crises, usually precipitated by parvovirus B19 infection may cause sudden increase in the severity of anemia and low reticulocytes count.

Investigations:

-The patients and other family member should be screened for features of compensated hemolysis.
-Anemia is usual , Hb. Level are variable depend on the degree of compensation..
-Normal blood indices.
-Reticulocytosis 5-20%.
-Blood film will show **microspherocytes** which are densely staining with smaller diameters than normal red cells but the direct coombs test is negative excluding immune haemolysis..
-Bone marrow will show Erythroid hyperplasia.
-**Special tests**:

1. Osmotic fragility test: show increased sensitivity to lysis in hypotonic saline solution but is limited by lack of sensitivity and specificity.
2. More specific Flow cytometry which is usually used in borderline cases
3. Auto-haemolysis test: show increase auto-haemolysis which is corrected by glucose.
4. Direct antiglobulin test (Coombs test).Which is usually ***negative***.
5. Chromium-51 studies used to document the dominates splenic destruction.

Treatment:

-The principal form of treatment is ***splenectomy*** although this should not be performed unless clinically indicated because of anemia or gall stone because the risk of post-splenectomy sepsis, particularly in early child hood.
Splenectomy should always produce a rise in hemoglobin level to normal although microspherocytes formed in the rest of the RES will remain.
Splenectomy should be delayed until after 6 years of age in view of risk of sepsis
- ***Folic acid*** 5 mg daily is given prophylaxis for life. .
- Acute hemolytic crises required transfusion support.

Management of splenectomised patients:

1. Vaccinate with pneumococcal , haemophilus influenza type B.meningeococcal group C and influenza vaccine at least 2-3 wks. before elective splenectomy.
Vaccination should be given after emergency surgery but may be less effective.
2.Pneumococcal re-immunization should be given at least 5-years and influenza annually.
Vaccination state must be documented.
3. Lifelong prophylactic penicillin V 500 mg twice daily is recommended. In penicillin allergic patients consider macrolide.
4. Patient should be educated regarding the risk of infection and methods of prophylaxis.
5. A card of bracelet should be carried to alert health professionals to the risk of overwhelming sepsis.
6. in septicemia , patient should be resuscitated and given IV antibiotics to cover pneumococcus, haemophilus and menigiococcus.
7.The risk of cerebral malaria is increased in the event of infection.
8. Animal bites should be promptly treated with local disinfection and antibiotics to prevent serious soft tissues infection and septicemia.