sideroblastic anemia
(a) Iron deficiency
(b) Chronic inflammation or malignancy

IRON

PROTOPORPHYRIN

Sideroblastic anaemia

Haem + Globin

Thalassaemia (α or β)

Haemoglobin

Haem synthesis
Sideroblastic anaemia

Sideroblastic anemia is a refractory anaemia that is defined by the presence of many pathological ring sideroblasts in the BM. These are abnormal erythroblast containing numerous iron granules arranged in a ring or collar around the nucleus. It is diagnosed when 15% or more of marrow erythroblasts are ring sideroblast.
classification

• Hereditary: X chromosome linked ALA-S mutation
• Acquired: myelodysplasia (refractory anemia with ring sideroblasts), lead poisoning.

Lead inhibits both haem and globin synthesis at number of points in addition it interferes with the breakdown of RNA causing accumulation of denatured RNA in red cells (basophilic stippling in PB).
### Differential diagnosis

<table>
<thead>
<tr>
<th>Test</th>
<th>Iron-deficiency anaemia</th>
<th>Sideroblastic anaemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum iron</td>
<td>↓</td>
<td>↑</td>
</tr>
<tr>
<td>Total iron-binding capacity</td>
<td>↑</td>
<td>N</td>
</tr>
<tr>
<td>% saturation</td>
<td>↓</td>
<td>↑</td>
</tr>
<tr>
<td>Ferritin</td>
<td>↓</td>
<td>↑</td>
</tr>
<tr>
<td>Bone marrow iron stores</td>
<td>Absent</td>
<td>↑</td>
</tr>
<tr>
<td>Sideroblasts</td>
<td>Absent</td>
<td>'Ring' sideroblasts</td>
</tr>
</tbody>
</table>
treatment

• Pyridoxine therapy.
• Repeated blood transfusion to maintain satisfactory Hb level.