Investigation of a raised ferritin

Introduction

Raised serum ferritin levels can be due to multiple different aetiologies, including iron overload, inflammation, liver or renal disease, malignancy and metabolic syndrome. The following algorithm is a suggested approach to the investigation of isolated elevated serum ferritin levels in patients without known secondary iron overload (modified from Cullis et al).

![Algorithm Diagram]

1. **FBC abnormal, Tsat raised**
   - Consider iron loading anaemia (e.g. thalassaemia intermedia, HbH)
   - Check FBC, LFT, transferrin saturation (Tsat)
   - If FBC normal, Tsat raised, proceed to HFE genotyping.
   - If FBC abnormal, Tsat raised, proceed to FBC normal, Tsat raised.

2. **FBC normal, Tsat raised**
   - Ferritin <1000 mcg/l
     - Yes: Repeat SF and Tsat in 3-6 months.
     - No: Consider causes other than iron accumulation:
       - Alcohol
       - Inflammatory disorders
       - Metabolic syndrome
       - Tissue damage/cell turnover
       - Manage as per diagnosis.

3. **Raised ferritin**
   - >300 mcg/l male
   - >200 mcg/l female
   - Yes: If SF remains elevated contact Haematology SPR advise line haematologyregistrar.enquiries@nhs.net.
   - No: Consider causes other than iron accumulation:
     - Abnormal LFT: refer directly to Hepatology.
     - Normal LFT: refer to Haematology (routine).
     - Consider assessment of liver iron stores (Ferriscan/T2* MRI or liver biopsy) and rare causes (table 1).
Table 1: Causes of a raised ferritin

<table>
<thead>
<tr>
<th>Increased ferritin synthesis due to iron accumulation</th>
<th>Increase in ferritin synthesis not associated with significant iron accumulation</th>
<th>Increased ferritin as a result of cellular damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hereditary (genetic) haemochromatosis</td>
<td>Malignancies</td>
<td>Liver diseases including: liver necrosis, chronic viral hepatitis, alcoholic and non-alcoholic steatohepatitis *</td>
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<tr>
<td>Hereditary acaeruloplasmaemia</td>
<td>Malignant or reactive histiocytosis</td>
<td>Chronic excess alcohol consumption</td>
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<tr>
<td>Secondary iron overload from blood transfusion or excessive iron intake/administration</td>
<td>Hereditary hyperferritinaemia with and without cataracts</td>
<td></td>
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<td>Ineffective erythropoiesis: sideroblastic anaemia, some myelodysplastic syndromes(e.g. refractory anaemia with ring sideroblasts)</td>
<td>Gaucher disease</td>
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<td>Thalassaemia</td>
<td>Acute and chronic infections</td>
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<tr>
<td>Atransferrinaemia</td>
<td>Chronic inflammatory disorders</td>
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<tr>
<td>Ferroportin disease</td>
<td>Autoimmune disorders</td>
<td></td>
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</tbody>
</table>

*may also have iron overload

Documents:

SS9, Haemochromatosis management pathway

References:


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Review

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<tr>
<td>Dr Henna Wong</td>
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