A005 - THROMBOCYTOSIS IN ADULT PATIENTS

What is thrombocytosis?

Thrombocytosis is defined as a high number of circulating platelets in the blood and is usually an incidental finding on a routine FBC.

What causes thrombocytosis?

This is due to **increased production** which can be a primary bone marrow problem (rare) or be secondary/reactive (very common) or **reduced destruction** due to hyposplenism.

Causes of raised platelets
Primary – clonal bone marrow disorders (myeloproliferative disorders)
Essential thrombocythaemia (ET) – isolated thrombocytosis
Polycythaemia vera (PV) – thrombocytosis with erythrocytosis
Myelofibrosis (MF) – thrombocytosis and anaemia (due to marrow fibrosis)
Chronic myeloid leukaemia (CML) - Philadelphia chromosome t(9;22) present
Rarely as part of the myelodysplastic syndrome (platelets are usually low in MDS)
Secondary ('reactive') – bone marrow is normal
Infection (acute or chronic)
Inflammatory disorders e.g. inflammatory bowel disease, arthritis, connective tissue disorders
Acute blood loss
Chronic blood loss / iron deficiency
Trauma or surgery
Malignancy
Rebound following chemotherapy
Splenectomy/hyposplenism (*due to decreased removal from the blood*)

What investigations should be performed in patients with persistent thrombocytosis?

(platelets >450 x10^9/L over 2-3 months)

- History – splenectomy; blood loss; inflammatory disorder; chronic infection; thrombosis; occult malignancy
- Examination – spleen, evidence inflammation/infection/malignancy
- FBC – review if other cells raised
- Ferritin/iron studies – iron deficient
- CRP/ESR
- Autoantibody screen, rheumatoid factor (if inflammatory disease suspected)
- JAK2 mutation if no secondary cause (available via ICE – please state in clinical details that patient has thrombocytosis and CALR and MPL will be checked if JAK2 negative)

N.B *If U and Es checked – there is often **spurious hyperkalaemia** in primary thrombocytosis – this is a laboratory anomaly caused by potassium leaking from platelets in storage. It does not affect the patient.*

What problems do a secondary ('reactive') thrombocytosis cause?

Thrombus formation is extremely rare. It tends to occur in patients with platelet count more than $1000x10^9$/L **plus** other risk factors for thrombosis.

- complications of the underlying cause e.g. bleeding, are much more common

What treatments are given to patients with reactive thrombocytosis?

- treatment of the underlying condition
- patients with additional risk factors for thrombosis e.g. imminent surgery, may need antithrombotic measures e.g. compression stockings, aspirin or prophylactic heparin.

What problems result from thrombocytosis caused by a myeloproliferative disorder?

Patients are at increased risk of both thrombotic (arterial and venous) and haemorrhagic events. The most important risk factors for a thrombotic event are:

- age over 60 years
- history of thrombotic event
- presence of other risk factors for arterial vascular disease.

Haemorrhagic complications are less common but are more likely to occur if the platelet count is more than $1000x10^9$/L and very likely if it is $>1500x10^9$/L.

What treatments are given to patients with a myeloproliferative disorder?

- watchful waiting +/- aspirin
- cytoreductive therapy e.g. hydroxycarbamide or anagrelide, and aspirin

When should I seek further advice or refer to haematology?

- patients positive for JAK2/CALR/MPL (request JAK2 via ICE)
- persistent thrombocytosis $\geq 600x10^9$/L over 6-8 weeks with no obvious reactive cause
- persistent thrombocytosis $\geq 450x10^9$/L associated with other full blood count abnormalities (*excluding* anaemia due to iron deficiency)
- persistent thrombocytosis $\geq 450x10^9$/L associated with thrombotic events
- thrombocytosis $\geq 450x10^9$/L associated with splenomegaly (either clinically or radiologically)

What follow up is recommended for patients not referred to haematology?

- asymptomatic patients with chronic reactive thrombocytosis do not require regular FBCs - although the platelet count may be a useful marker of the disease activity.
- if a reactive cause for thrombocytosis has not been identified, it may be prudent to recheck the patient's FBC every 3 to 6 months to ensure they are not developing a myeloproliferative disorder (rising platelet count – increase in other cell types).

What other advice should I give?

- patients should be asked to return for FBC if they develop thrombotic (e.g. TIAs) or haemorrhagic symptoms or left upper quadrant discomfort (might suggest splenomegaly).
- lifestyle should be reviewed and risk factors for arterial/venous thrombosis addressed.

References

Guideline for investigation and management of adults and children presenting with thrombocytosis – Claire Harrison et al. British Journal Haematology 2010, 149, 352-375
http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2141.2010.08122.x/full