Immune Thrombocytopenic Purpura

No platelets, no problem?

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Session Aims

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Platelets 101

Overview of platelets and their function.

02

ITP: Pathology

The pathophysiology of ITP, including diangosis.

03

ITP: Treatment

How ITP is managed, and the affect on platelets.

04

ITP: When to Worry

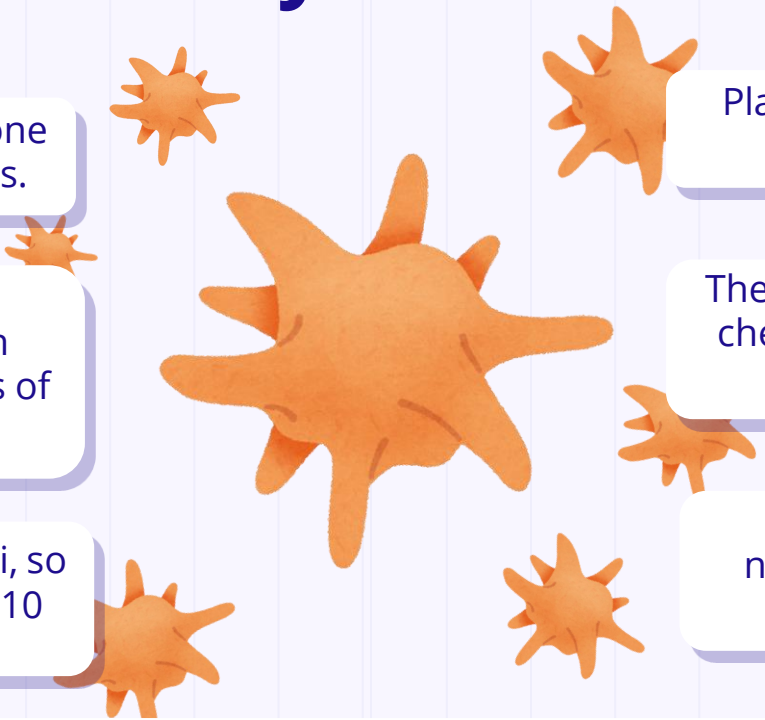
When should we urgently refer patients?

Platelets 101: Key Facts.

Platelets are made in the bone marrow by megakaryocytes.

Megakaryocytes are multinucleate cells which fragment to produce 1000s of platelets.

Platelets do not have nuclei, so have short life spans - ~7-10 days.



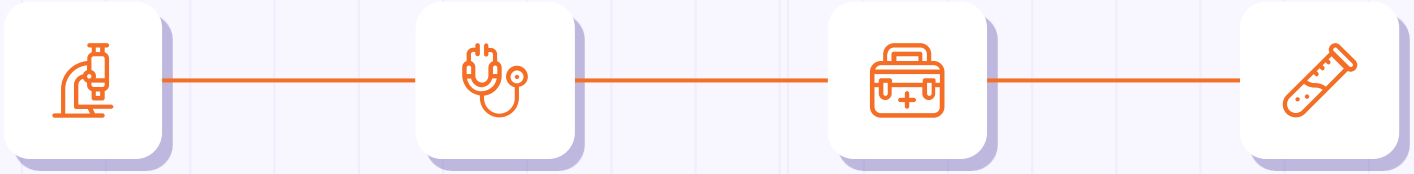
Platelets are an essential part of primary clotting.

They change shape and release chemicals to stimulate further clotting.

A key role is to provide a negative reacting surface for secondary clotting.

Humans have an excess of platelets: 150-400x10^9/L.
However, the effectiveness of clotting is dependent on the quality of platelets available.

Platelets 101: Function



Resting

- Platelets circulate in the blood.
- Vascular flow forces them to the edges of blood vessels.
- This ensures maximum access to damage.

Activation

- Platelets interact with exposed collagen and vWF to localise them to an injury.
- They change shape and begin secreting granule contents.

Aggregation

- Released cytokines e.g. serotonin trigger other platelets to activate.
- These platelets form bonds via GpIIb/IIIa interactions.

Plug Formation

- Interaction with fibrinogen results in platelet plug formation.
- This is a negative reaction surface with exposed calcium, which in turn supports secondary clotting.

Immune Thrombocytopenic Purpura (ITP).

Isolated platelet count of **<100x10^9/L**

Thrombocytopenia

Symptoms can vary widely. Common symptoms include petechiae and menorrhagia. Severe symptoms include haemorrhage.

Symptoms

Both adults and children can develop ITP, however, the pathophysiology is different, as is the clinical course.

Adult vs. Child

ITP is an autoimmune process. It is the result of increased clearance of platelets from the peripheral blood by antiplatelet antibodies.

Immune-Mediated

ITP: Is it genuine?

New platelet counts <120x10^9/L should be checked for clots.

New platelet counts <100x10^9/L should have a film review.

It is **essential** to check that the sample is not clotted. This must be done **before** phoning the result.

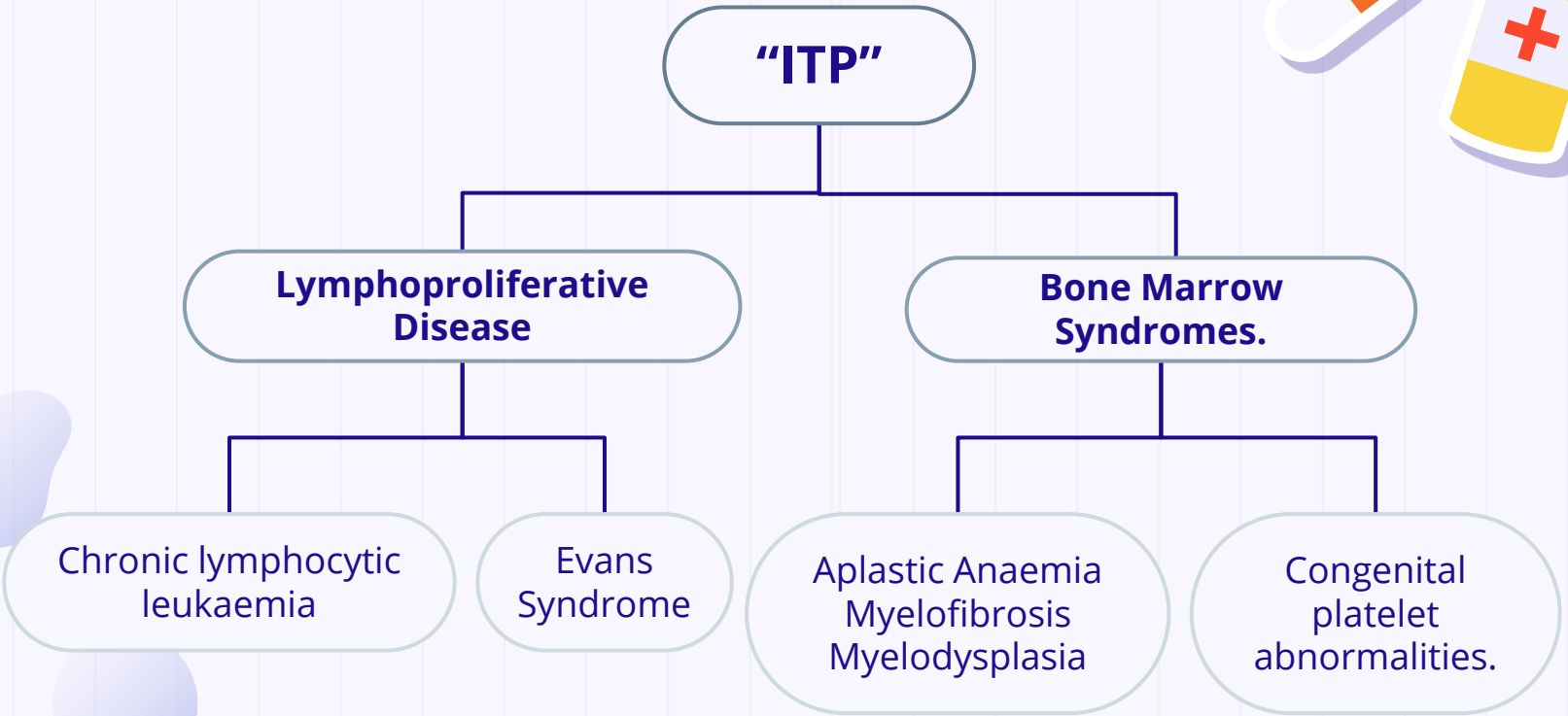
Platelet counts can be falsely lowered for preanalytical reasons e.g. diluted sample. Consider requesting a repeat to confirm the results.

If the analysers produce any platelet flags, it may be beneficial to review the film pre-phoning the result, as clumps are more likely.

ITP: Differential Diagnosis

Treatment	Differential Features (Blood)
Sepsis/Infection	Leucocytosis. Toxic neutrophils. ^CRP
Fragmentation Syndromes	Fragmentation, raised reticulocytes, normocytic anaemia
Drugs	Depends on drug's function/action.
Liver Disease	Deranged liver function. High bilirubin.
B12/Folate Deficiency	Macrocytic anaemia, hyper-segmented neutrophils. Pancytopenia in severe cases. Low B12/Folate.
Thyroid Disease	Deranged thyroid function. Both hypo and hyperthyroidism can result in thrombocytopenia.

ITP and Haematology



Adults vs. Children

Adults.

- Slow onset: Platelets “fall” over many months.
- Most cases are idiopathic.
- Presenting features are highly variable, from mild bruising to intracranial haemorrhages.
- Most cases require treatment.

Children.

- Sudden onset: Platelets “plummet” over days.
- 2/3 cases triggered by infection.
- Tend to be short-lived and asymptomatic/mild.
- Most cases do NOT require treatment.
- 2/3 recover is <6 months.

ITP: When do we Treat?

Key Rule.

Platelets <30x10^9/L require treatment.

HOWEVER!

Symptoms of ITP can vary significantly, so treatment regimes are often individualised.

Exceptions?

- Counts >50x10^9/L are recommended for minor surgery.
- >80x10^9/L is recommended for major surgery.

ITP in Pregnancy

- Asymptomatic patients with platelets >20x10^9/L do not need treatment.
- >20x10^9/L is suitable for any birth.
- >80x10^9/L is suitable for epidurals.

ITP: Treatment.

Treatment	Method	Effects on FBC
Steroids	Supresses immune response.	None.
Ivlg	Currently unknown. Likely mediates antibody clearance.	None.
Rituximab	Anti-CD20, suppresses B-cell activity.	Lymphopenia.
TPO Agonists	Stimulates platelet production.	Rapid platelet increase. Can increase to dangerous levels.
Splenectomy	Reduces consumption. Prevents “platelet pooling.”	Red cell inclusions, spherocytes, bite cells, nucleated reds etc.

ITP: When do we stop treatment?

Aim

Counts >30x10^9/L are “safe”. Treatment must stop if a patient achieves a “normal” platelet count (>150x10^9/L).

Steroids

Steroids should NOT be used long-term. Patients who do not respond should be weaned off.

Ivlg

Ivlg is expensive and hard to access. It is only given in one-off doses in cases of severe bleeding.

ITP: Should we give platelets?

General Rule

Platelet transfusions are contraindicated as they are consumed by the patient's antibodies.

Are there exceptions?

Of course!

Patients with platelets <$30x10^9$/L who have severe, life-threatening bleeding including intracranial haemorrhages may benefit from a platelet transfusion.

ITP: When should we worry?

	New presentation	Known ITP
Platelets <10x10^9/L	At <10 all patients are at risk of spontaneous haemorrhage	
Platelets <30x10^9/L		
Platelets <50x10^9/L	Patients should be investigated in new cases to confirm their ITP.	
Platelets <100x10^9/L	Platelets 51-100x10^9/L do not pose a significant bleeding risk.	

In all positive cases, a film should be reviewed before placing on the HQ.

ITP: When should we Phone?

	New presentation	Known ITP
Platelets <10x10^9/L	Platelets <10 should be phoned to the on-call haematologist OOH.	
Platelets <30x10^9/L	Known patients with chronic platelets <30 do not need phoning.	
Platelets <50x10^9/L	Platelets <50 but >10 do not need phoning to the on-call haematologist in any ITP cases.	
Platelets <100x10^9/L	X	X

Low Plts: Key BMS Considerations.

Always check for clots, platelet clumps, fibrin etc.

It is **ESSENTIAL** to review a blood film for evidence of fragmentation.

It may be worth asking for a repeat- however, consider clinical details e.g. “petechiae” or “epistaxis” as this may suggest ITP over sampling error.

In the majority of stable ITP cases, platelets are contraindicated.

A haematologist should be contacted about **any** patient with platelets <10.

Remember that APML can present with severe thrombocytopenia!

Thanks

Do you have any questions?

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