25. CLINICAL INDICATIONS FOR PLATELETS

Platelet transfusion is indicated for the treatment and prevention of bleeding in patients with severe thrombocytopaenia and/or impaired platelet production and/or function.[1]

Key messages

- Platelet transfusion is indicated for all patients with clinically significant bleeding in whom thrombocytopenia is thought to be a major contributory factor.
- Platelet transfusion may be indicated for the prevention and treatment of haemorrhage in patients with thrombocytopenia or platelet function defects. [2]
- Prophylactic platelet transfusion may be indicated in certain clinical scenarios.
- Each platelet transfusion should be an independent clinical decision and take into account the relative risks and benefits to the patient.[3]
- Platelet transfusions are not indicated in all causes of thrombocytopenia, and may be contraindicated in certain conditions.[2]

Clinical implications

- The cause of the thrombocytopenia should always be established.[2]
- In patients with chronic failure of platelet production a specific threshold for transfusion may not be appropriate.[2]
- Long-term prophylactic platelet transfusions may lead to complications.[2]
- In patients undergoing invasive procedures, there is insufficient evidence to define a threshold platelet count that is associated with increasing risk of bleeding, however consensus guidance has been developed for certain conditions.

Background

The Patient Blood Management Guidelines have recommendations and practice points regarding platelet transfusion. These have subsequently been expanded upon in a consensus process to develop:

- Indications for platelet transfusion for patients with clinically significant bleeding;
- Indications for prophylactic platelet transfusion for prevention of bleeding; and
- Clinical contraindications for platelet transfusions.[4]

Clinical Indications for platelet transfusion for patients with clinically significant bleeding include:

1. Platelet transfusion is indicated for patients with clinically significant bleeding in whom thrombocytopenia is thought to be a major contributory factor, even if the platelet count is >10x10^9/L.
2. In patients with critical bleeding requiring massive blood transfusion. In these patients, the use of a Massive Transfusion Protocol (MTP) which includes platelet transfusions may reduce the risk of mortality.
3. Platelet transfusion is indicated for patients with congenital or acquired functional platelet defectsincluding complex cardiac surgery or patients on antiplatelet therapy (other than aspirin alone) requiring surgical interventionwho are actively bleeding. Platelet counts are not a reliable indicator in this case.
4. Whilst there is no consensus on a target platelet threshold for the management of bleeding patients with thrombocytopenia secondary to Disseminated Intravascular Coagulopathy (DIC), aiming to maintain platelet counts >50x10^9/L would seem to be reasonable, as well as correction of the underlying aetiology and replacement of coagulation factors. Platelet transfusion is not indicated for patients with chronic DIC or for whom there is no bleeding.
5. In general, platelet transfusion is not indicated in immune thrombocytopenia unless there is clinically significant bleeding.

Clinical Indications for prophylactic platelet transfusion for prevention of bleeding include:

1. Patients with severe thrombocytopenia undergoing chemotherapy and haematopoietic stem cell transplantation should be considered for prophylactic platelet transfusion at a platelet count of <10x10^9/L in the absence of risk factors and at <20x10^9/L in the presence of risk factors (e.g. fever).
2. In critically ill patients, in the absence of acute bleeding, the administration of platelet transfusion may be considered appropriate at a platelet count of <20x10^9/L (CC-PP11).[3] The administration of platelet transfusion may be considered appropriate at a higher platelet count for neonates, such as <25x10^9/L for term neonates and <30-50x10^9/L for preterm neonates or any neonate with Neonatal Alloimmune Thrombocytopenia (NAIT). Although in NAIT it is preferable to give platelets without the relevant HPA antigen, random donor platelets may be effective.
3. For patients with other causes of bone marrow failure with chronic failure of platelet production (e.g. myelodysplasia and aplastic anaemia), there is insufficient evidence to recommend a specific threshold for transfusion and such patients should be managed on an individual basis. Long term prophylactic platelet transfusion carries risks of complications such as alloimmunisation which may contribute to platelet transfusion refractoriness.
4. In patients undergoing invasive procedures, there is insufficient evidence to define a threshold platelet count that is associated with increasing risk of bleeding, however:
    - In general, for patients undergoing procedures such as insertion of central venous catheters, endoscopy and biopsy, lumbar puncture and laparotomy, a platelet count ≥50 x10^9/L is considered safe.
    - A lower platelet count may be tolerated for minor procedures such as simple dental extractions, skin biopsy and insertion of peripherally inserted central catheters (PICC) where adequate surface pressure can be applied.
    - For patients undergoing intracranial, intraocular and neuraxial surgery, it is generally suggested that the platelet count should be ≥100x10^9/L.
5. In patients with head injury, it is suggested to keep the platelet count >100x10^9/L.

6. Functional platelet disorders include inherited or acquired platelet function disorders. In these patients, prophylactic platelets may be considered before invasive procedures.

Clinical contraindications for platelet transfusions include:

1. Platelet transfusion is not indicated in patients where bleeding is unrelated to proven or anticipated decreased platelet count or to functional platelet defects.
2. For patients with Heparin Induced Thrombocytopenia (HIT) and Thrombotic Thrombocytopenic Purpura (TTP), platelet transfusion is contraindicated unless there is life-threatening haemorrhage as it can exacerbate the underlying conditions There are limited case reports regarding the successful use of platelets in patients with Haemolytic Uraemic Syndrome (HUS) and TTP to cover invasive procedures that cannot be postponed until the underlying disease has been resolved (e.g. central line placement for plasma exchange therapy).
3. The routine prophylactic use of platelets after cardiac surgery is not supported.

References

1. Klein HG & Anstee DJ, Mollison's Blood Transfusion in Clinical Medicine 11ed. Massachusetts Blackwell Publishing Ltd; 2005
2. National Blood Authority Patient blood management guidelines: Module 3 – Medical. Australia, 2012.
3. National Blood Authority Patient blood management guidelines: Module 4 – Critical Care. Australia, 2012.
4. Clinical Indications for platelet transfusion. Development of the Platelet Annex for the National Blood Supply Contingency Plan (NBCSP). National Blood Authority, Australia, 2013.
5. National Blood Authority Patient blood management guidelines: Module 2 – Perioperative. Australia, 2012.

Additional resources

- National Blood Authority Patient blood management guidelines: Module 1 – Critical Bleeding Massive Transfusion. Australia, 2012.
- Stanworth SJ et al. The Effect of a No-Prophylactic Versus Prophylactic Platelet Transfusion Strategy On Bleeding in Patients with Hematological Malignancies and Severe Thrombocytopenia (TOPPS trial). A Randomized Controlled, Non-Inferiority Trial. 54th ASH Annual Meeting Plenary Scientific Session 2012.
- BCSH Transfusion guidelines for neonates and older children. British Journal of Haematology 2004; 124: 433- 453.
- Ruggenenti P, Noris M & Remuzzi G. Thrombotic microangiopathy, haemolytic uraemic syndrome, and thrombotic thrombocytopaenic purpura. Kidney International 2001; 60: 831-846.
- Australian Red Cross Blood Service. Blood Component Information Circular of Information – An extension of blood component labels. Australia 2012.