TRIPOM
An EBPOM Partner

Dr Katie Samuels

-

ST7 Anaesthetics, Southmead Hospital, North Bristol Trust, Bristol BS10 5NB

-

10 December 2019

015

1

Perioperative anaemia and patient blood management

Anaemia is a common condition affecting approximately 30% of surgical patients, with iron deficiency being the leading cause (Musallam et al, 2011). The World Health Organization historically defined anaemia as a haemoglobin concentration of less than 120 g/litre for women and 130 g/litre for men. However, a more recent international consensus statement on management of perioperative anaemia has suggested using 130 g/litre for both men and women (Muñoz et al, 2017).

Why intervene?

If anaemia is not corrected before surgery then patients are not just more likely to need transfusion, but are at higher risk of perioperative complications and death (Munting and Klein, 2019). The National Institute for Health and Care Excellence (2015) guidelines therefore state that all non-urgent surgery should be delayed to allow optimization of anaemia. Adequate treatment of anaemia reduces the need for transfusion (along with its associated risks) and reduces the length of stay, consequently lessening health-care expenditure (Leahy et al, 2017).

Patient blood management

Patient blood management is an evidence-based directive optimizing care of patients at risk of perioperative transfusion, with the aim of avoiding blood transfusion unless completely necessary. Patient blood management uses three principles: red cell mass optimization, blood loss minimization, and improving tolerance of anaemia while rationalizing use of blood products. These measures can be implemented preoperatively, intraoperatively and postoperatively (Filipescu et al, 2017)

Dr Katie Samuels

-

ST7 Anaesthetics, Southmead Hospital, North Bristol Trust, Bristol BS10 5NB

-

10 December 2019

Preoperative assessment and optimization

The preoperative element of patient blood management plays a major role. Detection, investigation and treatment of anaemia of any cause is initiated, along with referral to other specialties or delay of surgery to allow optimization of haemoglobin levels if necessary.

Although anaemia is most commonly a result of iron deficiency, alternative causes including anaemia of chronic disease, megaloblastic anaemia and renal failure should be considered. Iron deficiency without anaemia is also important to detect because of its impact on the duration and severity of postoperative anaemia. Oral iron should be given to patients with iron deficiency with or without anaemia whose surgery is scheduled in over 6 weeks, with intravenous iron use indicated for patients who do not respond to oral iron, are unable to tolerate it, or if surgery is in less than 6 weeks.

Stopping antiplatelet and anticoagulant medications in patients at lower risk of thrombosis can also be considered to minimize intraoperative bleeding. Intraoperative blood conservation strategies can be planned at this stage, along with methods such as autologous blood donation for selected patients (e.g. Jehovah's Witnesses).

Intraoperative management

The mainstay of intraoperative management is reducing blood loss at the time of surgery, and can be affected by specific anaesthetic and surgical considerations. Surgically, the use of minimally invasive techniques where possible, along with meticulous haemostasis and use of haemostatic materials, can dramatically reduce blood loss. Systematic haemostatic drugs (e.g. tranexamic acid), along with the use of point of care haemostatic testing, cell salvage and institution of restrictive transfusion protocols, reduces the need for intraoperative transfusion. Using hypotensive anaesthesia in specific circumstances, along with optimization of cardiac output and oxygenation, is also of benefit.

TRIPOM
An EBPOM Partner

Dr Katie Samuels

-

ST7 Anaesthetics, Southmead Hospital, North Bristol Trust, Bristol BS10 5NB

-

10 December 2019

015

3

Postoperative care

In the recovery period, patient blood management involves initially testing for and identifying anaemia in susceptible patients, with consideration of erythropoiesis-stimulating agents and replacement of iron. The consensus document on postoperative anaemia management suggests the use of a single high dose intravenous iron preparation to rapidly replete iron stores (Muñoz et al, 2018). Postoperative blood loss can be minimized by rationalizing chemical thromboprophylaxis, minimizing iatrogenic blood loss (from blood sampling) and maintaining normothermia, with a restrictive transfusion threshold for 70–80 g/litre for most patients.

References

Filipescu D, Bănăţeanu R, Beuran M et al. Perioperative Patient Blood Management Programme. Multidisciplinary recommendations from the Patient Blood Management Initiative Group. Rom J Anaesth Intensive Care. 2017 Oct;24(2):139–157. https://doi.org/10.21454/rjaic.7518.242.fil

Leahy MF, Hofmann A, Towler S et al. Improved outcomes and reduced costs associated with a health-system-wide patient blood management program: a retrospective observational study in four major adult tertiary-care hospitals. Transfusion. 2017 Jun;57(6):1347–1358. https://doi.org/10.1111/trf.14006

Muñoz M, Acheson AG, Auerbach M et al. International consensus statement on the peri-operative management of anaemia and iron deficiency. Anaesthesia. 2017 Feb;72(2):233–247. https://doi.org/10.1111/anae.13773

Muñoz M, Acheson AG, Bisbe E et al. An international consensus statement on the management of postoperative anaemia after major surgical procedures. Anaesthesia. 2018 Nov;73(11):1418–1431. https://doi.org/10.1111/anae.14358

TRIPOM
An EBPOM Partner

Dr Katie Samuels

-

ST7 Anaesthetics, Southmead Hospital, North Bristol Trust, Bristol BS10 5NB

-

015

10 December 2019

4

Munting KE, Klein AA. Optimisation of pre-operative anaemia in patients before elective major surgery - why, who, when and how? Anaesthesia. 2019 Jan;74 Suppl 1:49–57. https://doi.org/10.1111/anae.14466

Musallam KM, Tamim HM, Richards T et al. Preoperative anaemia and postoperative outcomes in non-cardiac surgery: a retrospective cohort study. Lancet. 2011 Oct;378(9800):1396–1407. https://doi.org/10.1016/S0140-6736(11)61381-0

National Institute for Health and Care Excellence. 2015. Blood transfusion. NG24. (accessed 22 March 2018) https://www.nice.org.uk/guidance/ng24

Correspondence to: Dr Katie Samuel (Katie.samuel@nhs.net)