Length of Stay in Elective Surgery

Dr Andrew Taylor (Consultant Anaesthetist), Fran Staples Senior Sister (Pre-Assessment), Lynne Balderstone (Deputy Transfusion Practitioner), Emma Small (Transfusion Practitioner) Maidstone and Tunbridge Wells NHS Trust

One of the Patient Blood Management (PBM) recommendations is to identify and treat anaemia before elective surgery.⁽¹⁾ This poster highlights how treating preoperative iron deficiency anaemia (IDA) with intravenous (IV) iron (MonoFer[™] iron isomaltoside 1000, 10%) before surgery reduced transfusion rates and length of stay at Maidstone and Tunbridge Wells NHS Trust.

Introduction

At least 30% of patients are anaemic pre-surgery.⁽²⁾ Anaemia in surgery is classified as a haemoglobin concentration of less that 130g/L in both men and women. ^(2,3) Anaemia compounds the stress of surgery and is associated with increased morbidity and mortality ⁽¹⁾ which is summarised in Figure 1 below.



Figure 1: Summary of risk associated with undergoing surgery when anaemic⁽⁴⁾

Anaemic patients are more likely to receive a blood transfusion and⁽¹⁾ transfusion is an independent predictor of poor outcome.⁽⁵⁾ Therefore the combination of anaemia and blood transfusion together puts the patient at significant risk of postoperative complications.

Background

Based on PBM guidance, in 2013, the Pre-assessment Team began to identify patients with iron deficiency anaemia (IDA) whose surgery could not be delayed. These patients were referred for treatment with intravenous iron and received 1000 mg of *iron isomaltoside* (MonoFer[™]).

Method

Taking an Hb of <130g/L as indicative of anaemia, the Transfusion Team retrospectively analysed a cohort of 87 surgical patients between 2013 and 2017:

- Group 1: 37 non-anaemic patients
- Group 2: 30 anaemic patients who did not receive IV iron due to imminent surgery prior to *iron isomaltoside* availability.
- Group 3: 20 anaemic patients who received IV iron (*iron isomaltoside*) pre surgery



Length of stay in hospital was shorter for patients who were not anaemic and for anaemic patients who received IV iron (MonoFer™) before surgery

Results

The results of the audit are summarised in Table 1. Of the patients audited, the patients who were not anaemic at the time of surgery had the lowest transfusion rate and the shortest length of stay in hospital. The patients who received iron therapy pre-operatively were transfused less blood and left hospital 3.1 days earlier than the anaemic patients who did not receive iron.

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	Group 1 Non- anaemic patients	Group 2 Anaemic patients who did not receive IV iron before surgery	Group 3 Anaemic patients who received iron pre-operatively
Hb at Pre-assess Clinic (g/L)	144	111	104
Hb at surgery (g/L)	144	111	127
Average number of red cell units transfused	0.05	0.8	0.2
Average length of stay (days)	2.0	6.4	3.3
Cost of stay (bed cost £400 per day)	£800	£2560	£1320

Whilst the patients in group 3 had an average rise in Hb of 23g/L, they were still anaemic at the time of surgery which reflects the fact that higher iron doses could be beneficial for these patients. Low iron stores are associated with post-operative complications and⁽²⁾ the replenishment of iron stores in this group may have contributed to their recovery, lower transfusion rates and shorter lengths of stay.

Discussion and Recommendations

Treating pre-operative IDA is "essential".⁽³⁾ This small, unpublished audit reflects the findings of research in this field.⁽¹⁻⁴⁾ Whilst scientific conclusions cannot be drawn, the results validate the work of the Pre-assessment Team.

Identifying and treating IDA early is likely to benefit the patient most. Testing for anaemia at the point of referral in primary care or when undergoing investigations (e.g. colonoscopy) would buy critical time to allow the Hb level to rise. However, there may also be merit in replenishing the patients' iron stores even when the pre -operative interval is short. The scope of this work could be extended to encompass urgent surgery and treatment with IV iron (*iron isomaltoside*) could be considered in the recovery room or post-operatively.

References

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