Hospital study suggests that early transfusion increases acute upper GI re-bleeding risk

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Doctors have called for an urgent review of transfusion policies after a UK-wide study of over 200 hospitals found that patients admitted with acute upper gastrointestinal bleeding (AUGIB) are more than twice as likely to suffer further bleeding if they receive a red blood cell transfusion within 12 hours.

The study, in the July issue of *Alimentary Pharmacology and Therapeutics*, also found that death rates were more than a quarter higher in patients who had received transfusions within that timescale.

"AUGIB accounts for 14 per cent of red blood cell units transfused in the UK" says Professor Richard Logan from the University of Nottingham Medical School. "While red blood cell transfusions may save the lives of people who are experiencing considerable blood loss, the benefits are less evident when the bleeding is not as severe."

All UK National Health Service hospitals accepting acute admissions in the UK were invited to participate and 221 (82 per cent) agreed. Each hospital identified a clinical lead, who coordinated a team of case-identifiers and data-collectors.

Complete data was submitted to a secure website on 4,441 patients admitted during the two-month study period. For the purposes of the study, re-bleeding was identified as any bleeding occurring after first endoscopy.

The figures were adjusted using the initial haemoglobin (red blood) levels and the Rockall score - a widely used and well-established risk scoring tool - to take account of underlying differences between the transfused and non transfused patients. This enabled the researchers to isolate the effect that early transfusion, on its own, had on the patients.

Key findings included:

- 44 per cent of the patients with AUGIB were transfused with red blood cells within 12 hours of admission.
- Adjusted odds ratio figures showed that patients who were transfused in the first 12 hours faced a 126 per cent greater chance of re-bleeding than patients who had not been transfused. New admissions faced a higher risk of re-bleeding than people who were already in-patients.
- Patients with haemoglobin levels lower than 8g/dL were more likely to experience re-bleeding if they received a transfusion in the first 12 hours than those who did not receive a transfusion (23 per cent compared with 15 per cent).
- The difference in re-bleeding rates was much greater between patients with haemoglobin rates that exceeded 8g/dL - 24 per cent of patients transfused in the first 12 hours experienced re-bleeds, compared with 6.7 per cent of patients who did not receive a transfusion.
- The unadjusted death rate for all patients was 7.8 per cent and was significantly higher in inpatients (20 per cent) than new admissions (5.4 per cent). The adjusted death rate showed that patients who received early transfusions were 28 per cent more

likely to die than those who had not been transfused.

- Death rates were 13 per cent for all patients with an initial haemoglobin level of 8g/dL or less, regardless of whether they had received a transfusion. However in patients over 8g/dL, the mortality rates were 11 per cent in transfused patients and 4.3 per cent in patients who had not been transfused.

- Early transfusions were more likely to be given to patients who showed signs of haemodynamic instability, had a lower initial haemoglobin level and, when endoscoped, were found to have peptic ulcers, dilated veins in the oesophagus or major signs of recent bleeding.

"While our findings may be surprising, it should be pointed out that transfusions to replace red blood cells can sometimes result in serious adverse effects" says Professor Logan, who carried out the research with transfusion and gastroenterology experts from Edinburgh and Oxford.

"These can include increased risk of post-operative infection, acute respiratory distress syndrome, multi-organ failure and death.

"No clear mechanisms have been established yet to explain the increased risk of re-bleeding associated with blood transfusion found in this study.

"What is clear, however, is that a randomised comparison of restrictive and liberal transfusion policies in AUGIB is urgently required."

More information: Outcomes following early red blood cell transfusion in acute upper gastrointestinal bleeding. Hearnshaw et al. Alimentary Pharmacology & Therapeutics. 32, pp215-224. (July 2010). DOI: 10.1111/j.1365-2036.2010.04348.x

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