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CORRESPONDENCE

MINS and postoperative haemoglobin: statistics *versus* reality?

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Keywords: anaemia; cardiovascular risk; myocardial injury; noncardiac surgery; surgical stress

Editor—Turan and colleagues[1] recently published a retrospective analysis suggesting that the risk of myocardial injury after noncardiac surgery (MINS) may be associated with low postoperative (≤3 days) blood haemoglobin concentration, a relevant hypothesis with limited other data available.[2] However, despite a statistical model adjusting for all potential confounders in Table 1, and where the 'low' haemoglobin group had more hypotension, more colloids, more crystalloids, more bleeding, and more transfusion, the authors did not mention that the different patient groups were not compared according to the actual surgical procedure with regard to the probably more important factor of surgical trauma response (inflammation, etc.). As apparent from Appendix 2, the procedures ranged from non-stressful endoscopy to major abdominal surgery, which pose major differences in not only myocardial function/demand; other organ-specific stress responses are not discussed. Consequently, the relevant topic of postoperative haemoglobin (anaemia) and MINS needs to be studied in more detail under conditions of comparable surgical stress and patients' characteristics.

Declaration of interest

The author declares that they have no conflict of interest.

References

1. Turan A, Cohen B, Rivas E, et al. Association between postoperative haemoglobin and myocardial injury after noncardiac surgery: a retrospective cohort analysis. *Br J Anaesth* 2021; **126**: 94–101
2. Kougias P, Sharath S, Mi Z, Biswas K, Mills JL. Effect of postoperative permissive anemia and cardiovascular risk status on outcomes after major general and vascular surgery operative interventions. *Ann Surg* 2019; **270**: 602–11

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Reality supported by statistics. Comment on *Br J Anaesth* 2021; 126: e83

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Keywords: anaemia; haemoglobin; myocardial injury; noncardiac surgery; risk adjustment

Editor—Kehlet[1] asserts that procedure type may have confounded our analysis of anaemia and myocardial injury published recently in the *British Journal of Anaesthesia*.[2] In our published analysis, we adjusted for elective, emergency, and urgent classification, but not type of surgery.

We therefore conducted a sensitivity analysis adjusted for type of surgery categorised by the Clinical Classifications Software for Services and Procedures of the Agency for Healthcare Research and Quality (categories with <10 events were aggregated into one group). With this adjustment, the adjusted hazard ratio of myocardial injury after noncardiac surgery was 1.29 (95% confidence interval: 1.17; 1.43) for a 1 g dl^{-1} decrease in haemoglobin ($P<0.001$), which was identical to our original analysis. The strong association we report between anaemia and myocardial injury remains the same.

Declarations of interest

The authors declare that they have no conflicts of interest.

References

1. Kehlet H. MINS and postoperative haemoglobin—statistics *vs* reality? *Br J Anaesth* 2021; **126**: e83
2. Turan A, Cohen B, Rivas E, et al. Association between postoperative haemoglobin and myocardial injury after noncardiac surgery: a retrospective cohort analysis. *Br J Anaesth* October 7 2020. https://doi.org/10.1016/j.bja.2020.08.056

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Surgeons' view of the PREVENTT trial. Comment on *Br J Anaesth* 2021; 126: 9–11

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Keywords: anaemia; colorectal surgery; intravenous iron; iron deficiency anaemia; postoperative complications

Editor—We read with great interest the editorial by Meybohm and colleagues[1] commenting on the PREVENTT trial[2] and would like to bring the surgeon's point of view to the discussion.

In abdominal surgery, the most feared complications are death and septic complications such as surgical site infection and anastomotic leak.[3] Anaemia was identified by retrospective cohort studies as a risk factor for both surgical site infection[4] and anastomotic leak.[5] Further, perioperative blood transfusion is a risk factor for surgical site infection (including organ space surgical site infection, which includes anastomotic leak).[4,6,7] In its guidelines for optimised perioperative care in colorectal surgery, the Enhanced Recovery After Surgery (ERAS) Society recommends screening for preoperative anaemia and to correct it if found (strong level of recommendation).[8] Therefore, the results of the PREVENTT trial were awaited.

The trial was ambitious, involving 46 UK tertiary centres and including 487 patients.[2] Richards and colleagues[2] chose a composite primary outcome grouping of death or perioperative blood transfusion of one or more units of any blood product from randomisation until 30 days after surgery. However, we would like to express some concerns that prevent us from reaching a definitive conclusion regarding preoperative correction of anaemia using intravenous iron.

As a first concern, we believe that blood transfusion is not a good indicator of perioperative surgical complications caused by anaemia. Intraoperative blood transfusion may reflect difficult surgery (e.g. as a result of a locally advanced tumour or vascular reconstruction) and not necessarily be associated with the effects of preoperative anaemia causing poor tissue perfusion, ultimately leading to medical and surgical complications, such as anastomotic leak. In other words,

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