Reviewer's report

Title: Remifentanil ameliorates intestinal ischemia-reperfusion injury

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Reviewer: Neil Gerard Docherty

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This manuscript examines the potential of single bolus treatment with a synthetic mu-opiod agonist remifentanil (1ug/kg) to protect against intestinal ischemia-reperfusion injury in C57BL6 mice, as induced by 30 minute occlusion of the superior mesenteric artery.

This builds on a literature base focussed on ischemic pre-conditioning and the role of endogenous and exogenous opioids. The work is justified on the basis that remifentanil has been used in other models and is attractive given its short plasma half-life and hence limited potential to promote/exacerbate surgical ileus.

End-points were measured in plasma (IL-6) and small intestinal tissue (MDA and histological scoring) recovered at 60 minutes post-reperfusion. Intestinal segments were stratified into proximal (jejunal) and distal (ileal) sections for analysis. Chi2 and Mann-Whitney tests were used for group comparisons.

The authors demonstrate a reduction in histological grade in the reminfentanil group, most notable in the analysis of distal segments. This parallels relative reduction in local measures of MDA and systemic measures of IL-6.

The question posed by the authors is well defined and the methods are appropriate and well described. The data are sound but incomplete.

Major Compulsory Revisions

1. In terms of optimal scientific method, the lack of control non IRI groups does not allow the reviewer to assess the validity of the scoring system, particularly with regard to mild grades of inflammation in which the characteristic features have potential to resemble preparation artefacts.

The authors should grade the intestines of a group of control mice and include this data. These need not necessarily be sham operated.

2. Measurement of the plasma IL-6 levels should be underpinned by measures in baseline control animals.

Minor Revisions

1. Discussion of Bcl-2/BAX should make reference to their role in apoptosis.

2. The explanation of a reduced difference between treatment groups in proximal regions as being a consequence of collateral perfusion is not coherent with the observation that injury in saline treated animals is similar proximally and distally.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

No competing interests