Reviewer's report

Title: Decreased risk of postoperative nausea and vomiting (PONV) following emergency versus elective open cholecystectomy has implications for PONV prophylaxis: a retrospective cohort study

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Reviewer: Paul Karanicolas

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Summary:
This is a retrospective study comparing selected patients who underwent elective open cholecystectomy with those who underwent emergent open cholecystectomy. The authors compared the rate of post-operative nausea and vomiting (PONV) between groups, as recorded by the patients' care providers. They observed a lower rate of PONV in patients undergoing emergent cholecystectomy, and conclude that this effect is mediated centrally. They then propose study of agents that act centrally to reduce the risk of PONV.

General Comments:
The paper is well-written, but the study design is very limited due to the retrospective nature and the method of measuring the primary outcome. Therefore, despite the strong associated observed I have little confidence that the conclusions are valid. The authors' call for research into agents that might prevent PONV seems very premature based on these findings. The conclusion should state that an interesting association was observed that might warrant further study in a prospective study. Of course, it would be extremely difficult today to find enough patients undergoing planned open cholecystectomy to perform such a study. In any case, the clinical relevance of these findings are limited- patients at high risk of PONV should receive prophylaxis, of which many options are available. The results of this study do not really add much.

Specific Comments:
The title is not representative of the work presented here. The statement regarding implications for PONV prophylaxis should be removed.

The conclusions section of the abstract is too long and not really a conclusion, more of a discussion. It should be significantly shortened to represent the authors' main take-home point.

The authors examined patients undergoing elective and emergency planned open cholecystectomy (as opposed to planned laparoscopic cholecystectomy that was converted to open). In North American institutions these patients are very few- almost all patients, whether elective or emergent, are first explored via
laparoscopy. Why were these patients not explored laparoscopically? Did they have true contraindications to laparoscopy such as gallbladder cancer or severe cirrhosis? These are very selected patients and it is difficult to know whether these results apply to the general population.

Since this is a retrospective study we must rely on the existing notes for documentation of the primary outcome, PONV. This is a major limitation of this study. It is quite possible that care providers would be more likely to record that a patient was suffering from PONV if they did not suffer from other, more severe problems- such as severe pain, fever, and wound-related issues. These symptoms would be much more likely to occur in patients that underwent emergent rather than elective cholecystectomy. This seems to me to be a much more compelling explanation of the study’s finding than the author’s hypothesis.

75-85% of patients seem to have received a nasogastric tube, even following elective cholecystectomy. This seems very unusual and again does not reflect current common practices in North America. This again leads me to question the applicability of these findings. Why did patients receive nasogastric tubes?

There is no mention about the timeframe over which these patients were operated on. Since this is a retrospective study it is possible that the timeframe is different between groups- this could also explain the differences seen.

In general the rates of PONV observed are much lower than those commonly reported. This is likely due to the reliance of recording by the treating team and are an underrepresentation. This is a major problem given it is the study’s primary outcome.

The authors claim that they have adjusted for plausible confounders and therefore their conclusions are valid. As mentioned, the manner in which the primary outcome was measured makes these conclusions highly speculative. At best, this study serves to raise a potentially interesting hypothesis. If the authors are truly interested in exploring this relationship, a prospective, carefully controlled cohort study would be needed. That should be the conclusion of this paper. The authors’ suggestion that emetogens should be tested as a result of this study is not supported.

Level of interest: An article of limited interest

Quality of written English: Needs some language corrections before being published

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

Declaration of competing interests:

I declare that I have no competing interests