Reviewer's report

Title: Detection of Drug Effects on Gastric Emptying and Contractility Using a Wireless Motility Capsule

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Reviewer: Frank Friedenberg

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The article is an interesting idea which looks at the possibility of using the SmartPill to measure gastric emptying after exposure to placebo, a drug which should decrease gastric motor activity (morphine), and a drug which should accelerate gastric emptying (erythromycin).

Specific Comments- I believe these are all major compulsory issues.

1. The age span of the subjects are of some concern in that there may be intrinsic differences in the response to medication in an individual who is 19 vs. a subject who is 65 years. Also there is no mention that subjects or researchers were blinded.

2. Statistical Analysis – the comment about the capsule not exiting the stomach within 6 hours in 6 tests belongs in the results section. Moreover there is concern at arbitrarily picking 6 hours as the emptying time for those individuals in which the capsule did not exit by 6 hours. Therefore in someone whose capsule exited at 5.5 hours it would seem by analysis that a capsule that would have taken 8 hours was only 30 minutes slower using a high end cutoff of 6 hours. I think the analysis should have been done with elimination of these studies and this represents a shortcoming of the technology.

3. I don’t agree that the inferential analysis should assume a normal distribution.

4. I don’t understand what a heteroscedastic linear model is – would refer to a statistician. In my opinion the analysis should have consisted of pairwise comparisons of motility parameters between placebo (essentially your pre-values or baseline) and after drug.

5. p 7. Under gastric emptying time – how were the differences between placebo and erythromycin calculated? What is the P value for the difference which should be used rather than saying “statistically significant”

6. I think Tables 1 and 2 need to be redone eliminating the 6 cases where the capsule did not pass until the meal was given. Probable should be presented as medians with IQR and range.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I have no competing interests.