

Jul 20, 2021

Dear Editors and reviewers

We thank the reviewers for the detailed review and informative comments for our **manuscript NO: 69246** "A comparison of the impact of ERCP between pre-COVID-19 and current COVID-19 outbreaks in South Korea." Below are our answers to your questions and comments. We do hope that our answers will be satisfactory to you. Newly added description or comments are highlighted in yellow.

Reviewer #1

1) Title: Is this article a retrospective study? Or a survey? I would like you to change the title name e.g. A comparison of the impact of ERCP between pre-COVID-19 and current COVID-19 outbreaks in South Korea- retrospective survey.

Answer: Following your comment, I changed the title as "Comparison of the impact of endoscopic retrograde cholangiopancreatography between pre-COVID-19 and current COVID-19 outbreaks in South Korea- Retrospective survey"

2) Abstract reflects the work described in the manuscript?

Answer: We agree with reviewer that it seems that abstract represents the work mentioned in the manuscript.

3) Methods. In "COVID-19 quarantine and protective equipment", you described the detail of PPE and procedures under COVID-19 pandemic, however, we didn't know about the PPE before pandemic. You surveyed the pre-pandemic and under pandemic situations of ERCP, you should describe the differences of PPE, the flowchart before ERCP in the era of pre-pandemic.

Answer: Reviewer's comment is to the point. Actually, we have never experienced any viral outbreak such as COVID-19. Furthermore, the features and risk of COVID-19 were not known before we encountered in real practice. We newly added this in the manuscript and edited the manuscript in detail regarding the PPE as below:

“Throughout the ERCP procedures, all doctors and nurses wore personal protective equipment (PPE), including an N95 mask, waterproof gown, goggles, surgical gloves, waterproof shoe covers, and facial shields^[14,15].”

For the flowchart of ERCP before pandemic, as far as I am concerned, there was no universal guidelines in Korea. Therefore, rather than making a new flowchart, we newly added this in the manuscript.

“Before the COVID-19 outbreak, to the best of my knowledge, there were no universal guidelines regarding the regulation of PPE and the sequential process of ERCP. In the pre-pandemic era, we usually used a disposable surgical gown, surgical mask, goggles, and disposable gloves during the ERCP procedure”

The routine process of ERCP in our hospital is as follows. If patients visit at the ER, we usually perform ERCP ASAP if patient's condition is permitting after full evaluation including blood chemistry, abdominal CT scan and clinical symptoms. However, if the patients visit hospital via outpatient clinic, we make a reservation for hospitalization and do elective ERCPs after admission. However, this manuscript aimed to present the importance of PPE in the era of viral outbreak, therefore, the details in the pre-pandemic period were not described in the manuscript.

4) Results. Are the research objectives achieved by the experiments used in this study? What are the contributions that the study has made for research progress in this field?

Answer: In this study, we sought to answer that question. This is an observational study, not experimental result during the COVID-19 era. The main purpose was to compare and to see whether there is any change regarding the number of ERCP and clinical outcomes between pre- and during the COVID-19 outbreak. All procedure was successfully performed under the proposed algorithm [see **reference 21**. *The proposed algorithm for emergency endoscopy during the coronavirus disease 2019 outbreak. Korean J Intern Med 2020; 35: 1027-1030*]. Therefore, we are confident that ERCP procedures can be performed safely even during the viral outbreak.

5) Discussion. You should consider in detail why the number of ERCP cases was low in 2018 and why the number of cases increased in 2019. Also, as you know, a reduction in emergency ERCP can be a critical event, and the consequences can be fatal. Shouldn't the

emergency ERCP be reduced while maintaining PPE and barrier procedures against aerosols? (Regular ERCP can be reduced)

Answer: Your comment is to the point. This observational study was conducted only in a single center. This limitations has already been mentioned at the end of section of discussion. The numbers of ERCP can fluctuate under the any circumstances. Actually, we didn't analyze about it. It is hard to explain why the cases of ERCP in 2018 was low compared with 2019. In our city, there are four large volume tertiary hospitals nearby. The numbers of ERCP might have been to some extent influenced by availability of the endoscopists in and outside hospitals, numbers of holidays, and scope of indications etc.

Yes. We agree with reviewer. Emergency ERCP procedures should be provided if the medical health providers are fully protected with the PPE under the infection control guidelines.

6) In figure1, you should connect them with a dot line so that you can easily see the transition of the number of cases.

Answer: Following your comment, we added dotted lines for the better grasp in Fig 1.

Reviewer #2, 3, and 4

Thank you for your detailed and sincere reviews.