Author’s response to reviews

Title: Seasonal variations in the occurrence of acute appendicitis and their relationship with the presence of fecaliths in children

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Author’s response to reviews:

Miro Jukić (Reviewer 1):
Authors presented interesting retrospective study upon acute appendicitis and season correlation. I would recommend unifying numbers in results. Also would recommend to proofread the text in English.

Thank you for the suggestion. The text had been proofread by professionals as per your suggestion.

Ramesh Mark Nataraja (Reviewer 2):
This is an interesting well written article describing a retrospective examination of the seasonal variation of AA and faecaloliths in children

It is generally well written and concise

Methodology included all the relevant data points for a study on appendicitis and was retrospective in nature

Their results were that more appendectomies were performed in summer than non-summer months (101 patients vs 70 patients). There is no significant difference of laboratory results between the summer and non-summer patients. The percentage of AA patients with a fecalith is significantly lower in the summer (33.6%) than non-summer months (55.7%). There was no significant difference in appendiceal perforation/abscess between summer and non-summer months.

They conclude that "This study shows the differences of summer and non-summer AA. We believe the rise of summer AA is a result of lymphoid hyperplasia, which may have a correlation with the yearly outbreak of enteroviral infection in this region".

There are a few potential major concerns with this paper
1. What is the clinical relevance? The patients still had AA and still needed an appendectomy so how does this data change patient management?

Thank you for the question. This study only tries to present and explain the phenomenon of seasonal variation in the incidence of appendicitis. The seasonal variation in the occurrence of appendicitis in the presence or absence of a fecalith has not been studied previously.

2. It is retrospective in nature which will introduce bias although this is unlikely to affect their primary outcomes of the presence of a faecolith.

Thank you for the comment. I have included this statement in the limitations of this study.

3. The conclusions are not related to their results as although there may be an increase in the lymphoid hyperplasia of the appendix in the summer and also associated enteroviral infection there is no data in the paper to correlate with this - no histology or microbiology results - stool samples would have been interesting looking for viral remnants.

Thank you for the comment. I think a prospective study with detailed laboratory works are needed to clarify the relationship between enteroviral infection and appendicitis.

4. There are only 171 patients which is probably underpowered to detect a true difference

I agree with your comment. This is a single-institution research study and this has been mentioned as a limitation in the manuscript. Additional studies using a larger sample size are warranted.

Apart from these I'm slightly concerned that more than 90% of paediatric patients underwent a CT scan to diagnose the appendicitis (160/171) - this is a huge radiation risk and clinically not indicated. Pearce et al Lancet 2012 revealed this radiation risk and it is not standard practice in Europe, UK or Australasia for children to have CTs, USS are accurate enough when combined with clinical examination and assessment. If the authors want to investigate and improve the care that they provide, reducing this radiation burden would be an excellent start. This does not affect the manuscript it is only a clinical observation.

It is true that most of the patients had CT scans before the surgery. One of the reasons is that many patients were initially diagnosed in community hospitals where ultrasound experts were not available in the emergency departments. The patients had already undergone CT scanning when they were referred to our institution. In our institute, there is a standard procedure for the management of paediatric appendicitis, and CT scan is considered as a low-priority diagnostic tool.

I think that overall although the paper is well written the clinical or academic relevance is unfortunately limited and hence does not add much to the literature

Zenon Pogorelić (Reviewer 3):
1. Introduction - Few important sentences about appendicitis and treatment should be mentioned. Please provide following information and references at the beginning of the Introduction section: Acute appendicitis is the most common surgical condition in children (REF: Indian Pediatr. 2019;56(4):299-303.). In pediatric population complicated intra-abdominal infections in most of the cases are caused by perforation of the appendix, and may be one of the most important causes of morbidity in children (REF: Surg Infect (Larchmt). 2019; Doi: 10.1089/sur.2019.025.). Many studies showed that laparoscopic appendectomy is a safe and effective procedure for treatment of acute appendicitis in children (REF: J Laparoendosc Adv Surg Tech A. 2017;27(6):645-650. and J Surg Res. 2017;212:101-107.).

Thank you for the suggestion. The introduction has been revised as suggested.

2. Please provide clear inclusion and exclusion criteria in methodology.

Thank you for the suggestion. The criteria have been added in the Methods section of the revised manuscript.

3. Please provide hypothesis, primary and secondary outcome measurements in methodology.

The corresponding information has been added to the Methods section as per your suggestion.

4. Avoid "we" in presenting of the methodology and results. Please revise through the text. Eg. "We used Chi square and Student's T-test for statistical evaluation" should be "Chi square and Student's T-test were used for statistical evaluation".

The sentences have been revised as suggested. Thank you for the comment.

5. The authors need to provide information about surgical procedure (open and/or laparoscopic) in methodology, with brief description of procedure.

The surgical procedure has been mentioned briefly in the Methods section of the revised manuscript.

5. Please explain in methodology that patients were divided in two groups according to the month of the appendectomy. Use formulation like: "Based on month when surgery was performed, the patients were divided into two groups: the first group included patients operated on from.... and second group....."

The text has been rewritten as suggested. Thank you for the comment.

6. It would be nice if the authors should compare complications between two observed groups. This is also one of very important parameters that possibly may be influenced by season.

We noticed that there were more appendiceal perforations and abscesses in the non-summer group compared to the summer group (35.7% vs 25.7%), statistical significance notwithstanding.
7. It is very surprising that 160 children had a preoperative CT scan. Why do you perform routinely CT scan in children? It is not a standard of treatment because in many cases diagnosis may be established by clinical examination and laboratory data and confirmed by ultrasound. This is very unusual for pediatric population that almost all children underwent unnecessary irradiation before surgery. Please explain!

It is true that most of the patients with appendicitis have preoperative CT scans, not only in our institution but also in other hospitals in this country. The standard procedures in our hospital for the management of acute appendicitis do not prioritise the use of CT scans as a diagnostic tool. However, most of the patients in this study had already undergone CT scanning, which was performed in other community hospitals before they were referred to our medical centre. Additionally, there is a lack of ultrasound experts in the emergency rooms of community hospitals.

8. ‘perf/abs’ please provide full words –‘perforation and or abscess’

‘Perf/abs’ has been changed as suggested. Thank you for the suggestion.

9. Sentence "The presence of a fecalith had an association with appendiceal perf/abs (Table 4, p=0.000036)" is unclear. Should it be: " The presence of a fecalith had an association with appendiceal perforation or abscess was found (Table 4, p=0.000036)". 

The sentence has been corrected. Thank you for the suggestion.

10. Please provide p values on 3 decimal points "p=0.161056" should be "p=0.161" or p=0.000036" should be "p<0.001". Revise through the text.

The p values have been altered to 3 decimal points as per your suggestion. Thank you.

11. Presentation of the results is not well designed. Eg. " The % of AA patients with a fecalith is significantly higher in the non-summer months (55.7%) than summer (33.6%) (Table 3) because of fewer total AA patients in that period." p value is missing!

This part has been modified as suggested. Thank you.

12. It is not usual to use "%" in text without numbers. Eg. " The % of AA patients" should be " The percentage of AA patients"…

The ‘%’ has been corrected to ‘percentage’ in the text. Thank you for the suggestion.

13. Discussion section needs to be rewritten/re-arranged. Do not present review of literature in this section. Do not discuss your findings piecemeal. Focus on results from main objectives of the study. Write in four sequential paragraphs (without headings); (i) summary (not data) of findings from present study; (ii) logical and coherent comparison with existing literature with focus of comparison on main objective(s); and (iii) Implications for practice/policy/research with a concluding statement.
The discussion section has been rewritten as suggested.

15. At the end of the discussion please provide limitations of the study

The limitations of the study have been added to the revised version of the manuscript. Thank you.

16. Table 1. is not necessary and should be removed

Table 1 has been removed. Thank you.

17. Table 2. - Replace ‘p value’ with ‘p’

Thank you for the suggestion. The corresponding change has been made in the revised manuscript.

18. Tables 3 - 5. - Please provide new column with p value and delete the text below the Tables. Only p value should be present in Table.

Thank you for the suggestion. The corresponding changes have been made in the revised manuscript.

19. Tables 3 - 5. should be merged into one Table.

Tables 3 and 5 have been merged as per your suggestion. However, it is difficult to alter Table 4 at this point. Thank you.

20. The quality of English should be improved! Please revise by native speaker!

Thank you for the comment. The text had been proofread by professionals as per your suggestion.