Reviewer’s report

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

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Reviewer: Ramesh Nataraja

Reviewer's report:

This is an interesting well written article describing a retrospective examination of the seasonal variation of AA and faecoliths 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 appendicectomy so how does this data change patient management?

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

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 be interesting looking for viral remnants

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

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

I wish the authors well in their future research in this common condition as there are many other controversies that need to be clarified in treating paediatric appendicitis

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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I am able to assess the statistics

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