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TIME CHALLENGE OF THEATER ENTRANCE AMONG LESS THAN FOURTEEN WITH ACUTE APPENDICITIS IN AL KHANSA'A TEACHING HOSPITAL

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ABSTRACT

Background: The most frequent surgical emergency worldwide is acute appendicitis. Although the exact causes of this illness are still unknown, it is most likely caused by luminal obstruction which is produced by internal or external compression, such as lymphoid hyperplasia or inspissated fecal debris or appendicoliths. Literature review shows that there is little evidence to justify the widespread practice of early appendectomy. Additionally, recent studies on pediatric patients indicate that delaying surgery while receiving intravenous fluid and antibiotic treatment is a viable option. **Objective:** To evaluate is better to do for pediatric patients with an acute appendicitis, whether immediate appendectomy or it can be approached in a semi-elective manner. **Methods:** The current study is a hospital based retrospective case-series study. All patients with signs and symptoms of an acute appendicitis who were hospitalized to Al-Khansa'a Teaching Hospital from the time period between the first of October 2024 to end of October 2024 were included. The Questionnaire was composed of two parts, the first included demographic information of the patients and the second covered specific acute appendicitis information. **Results:** The study included 52 participants; the mean age is 9.14 ± 4.21 years. 28 (53.86%) of them were males and 24 (46.14%) were females, with male: female ratio = 1.16. the diagnosis of acute appendicitis was prevalent among the age group of 5 – less than 10 years in 28 (53.86%) patients, followed by the age group of 10 - less than 14 years in 16 (30.76%) patients, lastly; the age group of less than 5 years in 8 (15.38%) of the study population. Complicated appendicitis was prevalent among 7 (13.4%), while uncomplicated appendicitis was prevalent among 45 (86.6%) of the study population. 5 out of 11 (45.45) patients with non-operative patients were from the age group of 5 – less than 10 years, of them 3 were males and 2 were females. But equal numbers of patients 3 out of 11 (27.27%) (2 males and 1 female) were from the age group of 10 - less than 14 years and the age group of less than 5 years respectively. While, out of 41 patients treated by appendectomy; 38 (92.69%) of the patients did open laparotomy while 3 (7.31%) patients did laparoscopic appendectomy. It's evident than elevated WBC counts was statistically significant with more proportion among conservative group ($P < 0.005$). Moreover; body temperature of more than 38 C^o was statistically significant with more proportion among conservative group ($P < 0.005$). Furthermore; Alvardo score of more than 7 was statistically significant with more proportion among operative group ($P < 0.005$). **Conclusions:** Operative management of acute appendicitis is the main treatment choice of uncomplicated acute appendicitis; conservative management can be useful for some cases. Alvarado score is a useful tool for detecting which patients need operation. More studies are needed to confirm which is treatment option is better.

KEYWORDS: Acute appendicitis, Operative, Non-operative, Management, Mosul, Iraq.

INTRODUCTION

The most frequent surgical emergency worldwide is acute appendicitis.[1] Although the exact causes of this illness are still unknown, it is most likely caused by luminal obstruction which is produced by internal or external compression, such as lymphoid hyperplasia or inspissated fecal debris or appendicoliths.[2,3] The appendiceal wall tension is raised by the luminal blockage, which also causes increased mucus production, bacterial overgrowth, and stasis. As a result, blood and lymph flow are reduced, which causes necrosis and perforation.[4]

The appendix has long been thought to act as a microbial reservoir, possibly for the replenishment of colonic bacterium types.[5] A particular group of bacteria inhabits the appendix in comparison to the rest of the gastrointestinal system. Although the role of the microbiota in the pathogenesis of appendicitis is unclear, 16 s ribosomal RNA sequencing of appendiceal specimens from cases of pediatric appendicitis revealed an increased abundance of anaerobic bacteria from the phylum Fusobacteria and a decreased abundance of Bacteroides species.[6] It would need further study to confirm these findings, but identifying persistent microorganisms could help doctors choose the best antibiotics to treat complicated appendicitis or abscess formation.[7]

It may be difficult to diagnose intestinal pathology in young children; but use of imaging and laboratory testing can help doctors diagnose patients more quickly, reduce the number of unsuccessful appendectomies, and decrease complications from appendiceal perforation.[8] Although there is no single test that can reliably and accurately diagnose acute appendicitis, investigation results must always be interpreted in conjunction with the patient's medical history and the results of a physical examination.[9,10]

It is possible that early surgical intervention stops disease development because these events happen gradually.[10] The historical idea of performing an emergency operation on individuals with acute appendicitis was in fact based on this idea.[11] However, a review of the literature shows that there is little evidence to justify the widespread practice of early appendectomy. Additionally, recent studies on pediatric patients indicate that delaying surgery while receiving intravenous fluid and antibiotic treatment is a viable option.[12] Despite two pediatric studies showing no difference in Surgical site infection rates between placebo and different antimicrobials, a meta-analysis of both adult and pediatric studies discovered that antimicrobial prophylaxis for pediatric patients showed a trend toward being helpful without statistical significance.[13]

The present study was especially designed for patients with acute appendicitis among less than fourteen years old, which were attend Al Kansa'a teaching hospital/ Surgical unit; the only Pediatric surgery center in Mosul city. To evaluate whether immediate intervention or it can be approached in a semi-elective manner. To that end, the relationships between duration of symptoms, timing of surgery, and complications were observed and documented.

2- MATERIAL AND METHODS

The current study is a retrospective case-series analysis. All patients with signs and symptoms of an acute appendicitis who were hospitalized to Al-Khansa'a Teaching Hospital from the time period between the first of October 2024 to end of October 2024. The patients case sheets were reviewed to acquire the mandatory information. This information was used to fill the checklists that been made especially for this purpose.

Demographic data (gender, age), questions about clinical symptoms, Alvarado score, time of emergency room admission and hospital discharge, lengths of hospital stay, initial diagnoses and WBC counts. SPSS (Statistical Package for the Social Sciences) were used to examine the data.

The survey was confidential and did not include any information that might be used to identify a specific individual. Ethical approval was given by Nineveh Health Directorate. Data collection was done over 1-month period.

3- RESULTS

The study included 52 participants; the mean age is 9.14 ± 4.21 years. 28 (53.86%) of them were males and 24 (46.14%) were females, with male: female ratio = 1.16.

Table 1 shows that the diagnosis of acute appendicitis was prevalent among the age group of 5 – less than 10 years in 28 (53.86%) patients, followed by the age group of 10 - less than 14 years in 16 (30.76%) patients, lastly; the age group of less than 5 years in 8 (15.38%) of the study population.

Table 1: The prevalence of acute appendicitis according to the age groups.

Age	Male		Female		Total	
	No.	%	No.	%	No.	%
Less than five years	4	7.69	4	7.69	8	15.38
5 – less than 10 years	16	30.76	12	23.07	28	53.86
10 – less than 14	8	15.38	8	15.38	16	30.76
Total	28	53.86	24	46.14	52	100

Table 2 illustrates the distribution of the study population according to appendicitis complications. It's evident that complicated appendicitis was prevalent among 7 (13.4%), while uncomplicated appendicitis was prevalent among 45 (86.6%) of the study population. Moreover; among the age of less than five years 2 (3.8%) patients had complicated appendicitis and 6 (11.5%) patients had uncomplicated appendicitis. While the age groups of 5 – less than 10 years 3 (5.7%) patients had complicated appendicitis versus 25 (48.1%) had uncomplicated

appendicitis. Lastly; among the age group of 10 – less than 14 years, 2 (3.8%) patients had complicated appendicitis and 14 (26.9%) of the study population had uncomplicated appendicitis.

Table 2: Distribution of study population according to appendicitis complications.

Age	Complicated		Uncomplicated		Total	
	No.	%	No.	%	No.	%
Less than five years	2	3.8	6	11.5	8	15.3
5 – less than 10 years	3	5.7	25	48.1	28	53.8
10 – less than 14 years	2	3.8	14	26.9	16	30.7
Total	7	13.4	45	86.6	52	100

Table 3 and figure 1 explain the distribution of non-operative patients according to different age groups. 5 out of 11 (45.45) patients with non-operative patients were from the age group of 5 – less than 10 years, of them 3 were males and 2 were females. Equal numbers of patients 3 out of 11 (27.27%) (2 males and 1 female) were from the age group of 10 - less than 14 years and the age group of less than 5 years respectively.

Table 3: Distribution of non-operative patients according to the age.

Age	Male		Female		Total	
	No.	%	No.	%	No.	%
Less than five years	2	18.18	1	9.095	3	27.27
5 – less than 10 years	3	27.27	2	18.18	5	45.45
10 – less than 14	2	18.18	1	9.095	3	27.27
Total	7	63.63	4	36.37	11	100

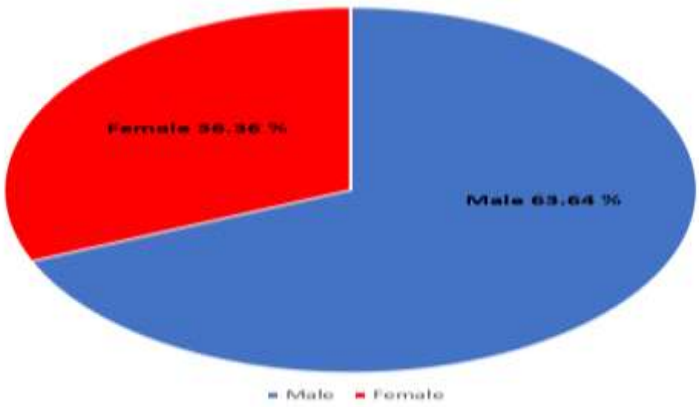

Figure 1: Distribution of non-operative patients according to gender.

Figure 2 shows type of operation done for patients with appendicitis, out of 41 patients treated by appendectomy; 38 (92.69%) of the patients did open laparotomy while 3 (7.31%) patients did laparoscopic appendectomy.

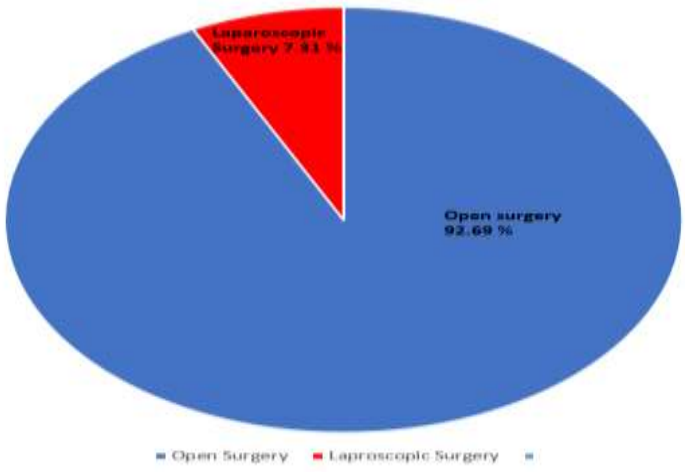

Figure 2: Distribution of operative patients according to the type of surgery.

Furthermore; out of 11 patients treated conservatively, 2 patients were return back with complicated appendicitis within 1 week, another 2 patients were having recurrent attacks of acute appendicitis within 6 months. Table 4 compares patients with conservative versus operative outcome regarding different variables. It's evident than elevated WBC counts was statistically significant with more proportion among conservative group ($P < 0.005$). Moreover; body temperature of more than 38 C^o was statistically significant with more proportion among conservative group ($P < 0.005$). Furthermore; Alvardo score of more than 7 was statistically significant with more proportion among operative group ($P < 0.005$). While the median age was statistically not significant (P value = 0.092) pain durations of more and less than 24 hours were statistically not significant (P value = 0.991 and 0.132) respectively.

Table 4: Comparison between conservative and operative outcome of patients with acute appendicitis.

Variables	Conservative		Operative		P value
	No.	%	No.	%	
Age, median (IQR)	7 (4-11)	----	9 (3-14)	---	0.092
Pain duration less than 24 hours	7	63.63	24	58.53	0.132
Pain duration more than 24 hours	4	36.37	17	41.46	0.991
Elevated WBC counts	8	72.72	6	14.63	**< 0.005**
Body temperature of more than 38 C^o	9	81.81	7	17.1	**< 0.005**
Alvarado score (more than 7)	2	18.18	37	90.24	**< 0.005**

4- DISCUSSION

To make the diagnosis, abdominal ultrasonography should be done in addition to the patient's medical history, physical examination, and laboratory testing. If ultrasonography is not enough, computed tomography (CT) or magnetic resonance imaging (MRI) may be used. Appendicitis is classified as either uncomplicated or complicated before any treatment is administered. The choice between conservative and surgical treatment for either form of appendicitis must be made after considering the patient's risk factors and the overall clinical picture. In all age groups, the preferred treatment for acute appendicitis is appendectomy. The study explored that male gender was predominant over female. Moreover; the mean age of the study population was 9.14 years with the age group of 5 to less than 10 was more prevalent than other age groups which is consistent with Qahtan Kokaz Hussein et al study results.[14] From the other hand; only 13 % of the study population had complicated appendicitis, with the age group of 5 to less than 10 years are more prevalent than other age groups as parallel to Siu Chung Ha et al study.[15] Again; male gender and the age group of 5 to less than 10 years founded to be treated conservatively more than other age groups which is comparable to the systemic review of George Sakellaris et al.[16] According to the patients' conditions and surgeons' experiences the majority of patients were treated by open appendectomy while laparoscopic surgery was done for three patients only. This is mean more training about laparoscopic surgery in children is mandatory to improve using of laparoscope. Furthermore; operative management of appendectomy founded to be more effective than non-operative as 2 patients were return back with complicated appendicitis within 1 week, another 2 patients were having recurrent attacks of acute appendicitis within 6 months which is obtained also from Jeff Armstrong et al.[17] Furthermore; conservative group founded to have more WBC count and a higher body temperature while operative group found to have more Alvardo score of greater, this is mean that patients with conservative groups had more suspicion for diagnosis of other issue than an acute appendicitis, as a result they left without surgery. No comparable study to compare, anyhow; Kerri A. McKie et al was found that the presence of each finding of complicated appendicitis depending on the National Surgical Quality Improvement Program (NSQIP) for Pediatric was independently associated with higher rates of any adverse events which need more surgery than conservative treatment.[18]

While we acknowledge a relatively small sample size and incomplete data, the study primary limitation is that it was not intended to assess the decision-making process involved in operative decision. As well as barriers in complying with recommendations such conservative management drug availability or cost, were not examined in this study. The study was unable to evaluate aspects such as the children's nutritional state, which may have also played a role in the rise in the number of appendicitis complications. Finally, the study was depended on the population of Mosul, which could not be generalized to other regions of Iraq and the world.

5- CONCLUSION AND RECOMMENDATION

In Spite of been operative management of acute appendicitis is the main treatment choice of uncomplicated acute appendicitis, conservative management can be useful for some cases. Alvarado score is a useful tool for detecting which patients need operation. More studies are needed to confirm which is treatment option is better.

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Conflict of interest

The authors report no conflict of interest concerning this study.

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