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Conservative Management of Acute Uncomplicated Appendicitis: A First Line Therapy in Tertiary Care Hospital

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Abstract
Background: *Acute appendicitis is one of the commonest cause of acute abdomen. For more than 100 years, surgeons have been successfully performing appendectomy to treat acute appendicitis. However, there is a recent trend to shift towards a more conservative approach. There has been a wide discussion and controversy on the surgical and non-surgical treatment of acute uncomplicated appendicitis.*
This work aimed to assess the effectiveness of non-operative conservative management in the treatment of acute uncomplicated appendicitis.
Method: *This was a single tertiary care level hospital based study done within the duration from 1st September 2016 to 31st January 2018. 180 patients with clinical and radiological features of acute appendicitis presenting within 48 hrs of onset of the symptoms were enrolled. The patients received a broad spectrum antibiotic and symptomatic treatment. The patients were followed up for 6 months.*
Results: *Total 180 patients were enrolled. 108 (60%) of patients were female and 72 (40%) patients were males with mean age of 36 years. 144 (80%) patients successfully responded with the conservative treatment with antibiotics while 36 (20%) patients failed. No mortality was recorded in our study. Out of 36 patients who failed, 13 patients developed appendicular abscess, 12 patients had perforation of appendix while 11 patients had appendicular lump.*
Conclusions: *Conservative management can be established as the first line of management for uncomplicated acute appendicitis patients having first attack successfully, but it should be followed with close monitoring of patients.*

Introduction

Acute appendicitis is one of the commonest causes of acute abdomen. There is a wide discussion and controversy on the surgical versus non-surgical treatment of acute uncomplicated appendicitis. Currently, appendectomy has been the mainstay treatment for even doubtful cases of appendicitis, given the low incidence of major complications.

It is also seen that in 15-30% of cases, the resected specimen of appendix is free from any pathology.[1,2] Appendectomy may also lead to postoperative complications like incision site infection, adhesions leading to mechanical

obstruction, incisional hernias and pneumonia. Surgery may also be associated with a longer hospital stay increasing financial burden and over utilization of hospital resources, in comparison to conservative management with antibiotics and analgesics. However, there is a concern that delayed treatment leading to perforation of appendix can also increase morbidity and mortality. However non operative or conservative treatment with antibiotics can be a effective and alternative option to surgery in most of the cases of acute uncomplicated appendicitis without increasing the risk and may also reduce hospital stay and costs in both developed and third world countries[3].

Appendectomy has not been challenged till recent times as the best treatment because of age old concerns of progression to perforation and resultant complications.[4,5] However, multiple studies in recent years have suggested that conservative antibiotic therapy can be useful in treating acute appendicitis.[6,7,8,9,10]

The concept of treating appendicitis's selected cases as conservative management is not new. In 1908, Alfred Stengel wrote: "Treated in a purely medical or temporary manner, the great majority of patients with appendicitis recover."[11]

Studies have also suggested that immediate appendectomy can be avoided at least for 24 hours without increasing morbidity if antibiotics are given.[12,13] Appendectomy may not be necessary for most of the cases of acute uncomplicated appendicitis as, the disease may resolve spontaneously without any need of a surgical approach or the rest cases can be treated with antibiotics alone.[14] This approach of conservative management has many advantages, including high success and low recurrence rates, reduced morbidity and mortality, less pain, shorter hospitalization and reduced costs.[15]

The aim of this study was to evaluate the effectiveness of conservative treatment with antibiotics in uncomplicated cases of acute appendicitis as first treatment plan and then to assess its failure rate.

Patients and Methods

This is a prospective non-randomized study of patients with age more than 14 years who have been diagnosed acute uncomplicated appendicitis in our hospital from 1st September 2016 to 31st January 2018. A total of 180 patients were enrolled in this study based on inclusion and exclusion criteria. Informed consent from all patients along with ethical approval for the study from the medical college ethical committee was obtained.

All patients above 14 years of age with a history of pain in right iliac fossa for less than 48 hours were enrolled. Adequate physical examination, total leukocyte count and ultrasonographic finding of non compressible are blind ended tubular structure with no evidence of rupture and an appendiceal diameter of 1.0 cm or less were considered for making clinical diagnosis of acute uncomplicated appendicitis. Exclusion criteria included USG or clinical findings suggestive of perforation of appendix. Appendicular lump, symptoms lasting for more than 48 hours or previously had similar kind of attack suggestive of recurrent appendicitis. Patients having co-morbid disease like diabetes mellitus and hypertension, immunocompromised patients, pregnancy and allergy to antibiotics were excluded.

Registering of the patients was done depending on the decision of the patients and their relatives after understanding both types of management with a caution of turning to appendectomy of any time. All patients meeting the inclusion criteria were then admitted and offered 1 gm ceftriaxone twice daily and Inj. metronidazole infusion 500 mg/100 ml thrice daily for at least 24 hours. Patients vital statistics including temperature, blood pressure, pulse rate, respiratory rate and local abdominal tenderness were recorded. Those patients who showed improvement of abdominal pain and tachycardia along with fever with discharged the next morning with advice to continue oral antibiotics (Tab cefixime 200 mg twice a day and Tab metronidazole 400 mg thrice daily) for 7 days. Patients who did not improve within 24

hours were considered to have failed conservative management and were subjected to appendectomy. Patients were advised to report immediately on recurrence of pain or vomiting or appearance of fever. Follow up at the end of treatment for six months was done. Patients were also told to inform us if they underwent an operation somewhere else.

Successful conservative management was defined as being discharged from the hospital following the relieving of symptoms without the need for surgery and no recurrence of symptoms within following six month period. Unsuccessful conservative management was divided into 2 groups. In first group were those patients who did not improve on conservative treatment, were therefore subjected to appendectomy even though willing for conservative approach initially. Second group comprised of those patients, who had recurrence of symptoms within the follow up period of 6 months after being successfully treated by conservative approach.

Results

In our study, 180 cases of acute uncomplicated appendicitis were enrolled. 108 (60%) patients were female and 72 (40%) patients were male. Mean age was 36 years and range was between 14 and 60 years. The maximum number of patients 74 (41%) belonged to age group 20-29 years.

Table 1: Age distribution of patients

Age (years)	No. of patients	Percentage	Mean age
< 20	14	7.8	18
20-29	74	41.1	27
30-39	48	26.7	35
40-49	36	20.0	46
50-60	8	4.4	54
Total	180	100	36

128 (71.1%) patients were admitted with features of acute appendicitis to the surgical ward with duration of symptoms less than 24 hours. 52 (28.95) patients presented with symptoms persisting for more than 24 hours but less than 48 hours.

Time duration	No. of patients	Percentage
< 24 hr	128	71.1
24-48 hr	52	28.9
Total	180	100

Out of the 180 patients, who were planned for conservative management, 144 (80%) of patients showed favorable response by alleviation of symptoms with no failure of treatment or recurrence in the follow up period of 6 months. However, the conservative management was not successful in remaining 36(20%) of the patients. Treatment failure during initial admission was noted in 25(13.89%) patients who were operated for appendectomy later on while 11 (6.11%) patients subsequently suffered from recurrent acute appendicitis in the follow up period of six months after being successfully managed on conservative management during primary admission.

Table 3: Results of conservative management

Time duration	No. of patients	Percentage
Successful	144	80
Treatment failure	25	13.89
Recurrence	11	6.11

Out of 36 patients who failed to respond to treatment, 25 patients were operated after 48 hours of treatment, 4 patients were operated after treatment of 7 days while 7 patients were operated during the follow up period of 6 months.

Table 4: Appendicectomies after trial of conservative management

Time of appendectomy	Number of patients
Surgery after 48 hours	25
Appendectomy after 7 days	04
Appendectomy with 6 months	07
Total	36

Out of 36 patients who were operated upon, 13 patients had appendicular abscess, 12 patients had perforation of appendix while 11 patients of appendicular lump deteriorated on conservative management.

Age, sex and duration of attacks of appendicitis had no significant correlation with the outcomes of the conservative management as shown in table 5.

Table 5: Outcomes of conservative treatment according to the sex and age distribution and duration of attacks of appendicitis

Variables		Success		Failure		p-value
		No.	%	No.	%	
Gender	Male	58	80.5	14	19.44	0.73
	Female	85	79.62	22	20.37	
Age group	≤ 20 years	10	71.4	4	28.6	0.85
	20-29 years	68	91.9	6	8.1	
	30-39 years	39	81	9	18.75	
	40-49 years	23	63.9	13	36.11	
	50-60 years	4	50	4	50	
Duration of symptoms of appendicitis	< 24 hrs	111	86.7	17	13.3	0.084
	24-48 hrs	33	63.5	19	36.5	

Discussion

Acute appendicitis is one of the most common causes of pain in abdomen. Traditionally any patient presenting with features of acute uncomplicated appendicitis is referred for urgent surgery. Although appendectomy has been considered as gold standard, conservative management with antibiotics is gaining more and more acceptance. The greatest advance of newer generation of highly effective broad spectrum antibiotics allow for more conservative approach in such cases.[16] There are many advantages of conservative management over surgical treatment. Antibiotics can give better results in those areas particularly developing countries where resources for surgical treatment are not readily available. Conservative treatment is associated with less cost effective balanced to surgery.[16] Antibiotic treatment also leads to reduced mortality and morbidity risk associated with surgical treatment.

In our study, 144 patients (80%) out of 180 enrolled patients were treated with the conservative management (antibiotics). 25 patients (13.89%) deteriorated on conservative treatment, hence were subjected to surgical treatment in their primary admission. Also, 11 (6.11%) patients developed recurrent appendicitis during the follow up period of 6 months. Hence, there was a failure rate of 20% i.e. 36 patients could not respond to conservative management. Hansson et al[17] also in their study found that 77.6% of their patients of acute uncomplicated appendicitis were treated successfully with conservative management. The results of the study nearly resemble our results. Another study done in surgery department of GMERS Medical College, Gandhinagar between years 2011-2013 showed 70% success rate with 30% failure results.[18] These results are also in agreement with our results.

The patients were administered third generation cephalosporin. Ceftriaxone and metronidazole in all our patients treated conservatively. Similar results were found by Vons C et al using Amoxicilln plus clauvalanic acid.[19]

Argument against the initial antibiotic therapy include the risk of recurrence, bad compliance with medical therapy, increased length of hospitalization, patient anxiety associated with subsequent episodes of abdominal pain, and the relatively low morbidity of appendectomy.[20]

In our study we inferred that the gender distribution, the difference in age groups and difference in time of presenting features had no significant effect on the outcomes of conservative treatment of acute appendicitis.

Conclusion

The majority of patients with uncomplicated acute appendicitis can be successfully treated by antibiotics instead of undergoing appendectomy, therefore avoiding it's associated morbidity and mortality. This conservative approach results in early return to normal activity and better quality of life measures. However, other factors like recurrence in long term follow up (<1 year) should be further investigated.

References

1. Mallik AA, Bari SU. Conservative management of acute appendicitis. J Gastrointest Surg .2009;13:966-970.
2. Andersson RE. The natural history and traditional management of appendicitis revisited: Spontaneous resolution and predominance of prehospital perforations imply that a correct diagnosis is more important than a early diagnosis. World J Surg. 2007;31:86-92.
3. Subramanian A, Liang MK. A 60 years literature review of stump appendicitis: the need for a critical view. Am J Surg .2012;203:503-507.
4. Fitz RH. Perforating inflammation of the vermiform appendix. Am J Med Sci. 1886;92:321-346.
5. McBurney C. Experience with early operative interface in cases of diseases of the vermiform appendix. NY Med J. 1889;50:676-684.
6. Gurin N, Slobodchuk Lu S, and Gavrilov Lu F. The efficacy of conservative management of patients with acute appendicitis on board ships at sea. Vestn Khir Im II Grek. 1992;148:144-150.
7. Adams ML. The medical management of acute appendicitis in a non-surgical environment: A retrospective case review. Mil Med .1990;155:345-347.
8. Bowers WF, Hughes CW and Bonilla KB. The treatment of acute appendicitis under sub-optimal conditions. US Armed Forces med J .1958;9:1545-1557.
9. Foraker AG. A reluctant surgeon at sea. JAMA .1981;245:2302-2303.
10. Campbell MR, Johnston SL 3rd, mashburn T et al. Nonoperative treatment of suspected appendicitis in remote medical care environments: Implication for future space flight medical care. J Am Coll Surg .2004;198:822-830.
11. Ingraham AM, Cohen ME, Bilimoria KY, Ko CY, Hall BL, Russell TR et al. Effect of delay to operation on outcomes in adults with acute appendicitis. Arch Surg. 2010;145:886-897.
12. Shindoh J, Niwa H, Kawai K, Ohata K, Isihara Y, Takabayashi N et al. Predictive factors for negative outcomes in initial non-operative management of suspected appendicitis. J Gastrointest Surg. 2010;14:309-314.
13. Liu K, Fogg L. Use of antibiotics alone for treatment of acute appendicitis: A systematic review and meta analysis. Surg .2011;150:673-683.
14. Mason RJ. Surgery for appendicitis: Is it necessary? Surg Infect Larchmt .2008;9:481-488.
15. Sakorafas GH, Mastoraki A, Lappas C, Sampanis D, Danias N, Smyrniotis V et al. Conservative treatment of acute appendicitis: heresy or an effective and acceptable alternative to surgery. Eur J Gatroenterol Hepatol. 2011;23:121-127.
16. Hansson J, Korner U, Khorram Manesh A, Solberg A, Lundholm K. Randomized clinical trial of antibiotic therapy versus appedectomy as primary patient of acute appendicitis in unselected patients. Br J Surg .2009 May;96(5):473-91.
17. Hasson J, Korner U, Ludwings K, Johnsson E, Johsson C, Lundolhm K. Antibiotics as first line therapy for acute appendicitis: Evidence for a change in clinical practice. World J Surg.2012 Sep;36:2028-2036.
18. Vaishnav U, Chauhan H. Evaluation of conservative management of acute appendicitis in tertiary care hospital. IAIM .2016 Feb;3:41-44.
19. Vons C, Barry C, Maitre S, Pautrat K, Leconte M, Costaglioli B et al. Amoxicyllin plus clauvalanic acid versus appendectomy for treatment of acute uncomplicated appendicitis: an open-label, non-inferiority, randomized controlled trial. Lancet. 2011;377:1573-1579.

20. Horst JA, Trehan I, Warner BW, Coh BG. Can children with uncomplicated acute appendicitis be treated with antibiotics instead of appendectomy? Annals of Emergency Medicine. 2015 Feb;S0196-0644(15) 00085-2.