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Original Research Article

A retrospective study on patients with appendicular mass after successful conservative treatment and to assess the need for interval appendicectomy

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ABSTRACT

Background: Appendicular mass is one sequelae in unoperated cases of acute appendicitis which are managed conservatively followed by interval appendicectomy (IA). Currently the need for IA has been questioned due to low risk of recurrence.
Methods: Data of all AM patients from 2005 to 2010 were collected and revised the following parameters: age, sex, length of hospital stay, symptoms and signs, total leucocyte count and USG. Those who developed similar pain and those who underwent emergency appendicectomy were considered as recurrence. Patients were grouped as: 1-patients who developed RIF pain,2-asymptomatic patients,3-patients who developed recurrent a/c appendicitis,4-patients who did not developed recurrent a/c appendicitis.
Results: Of the 93 patients, 12 patients underwent IA. Average duration between mass resolution and recurrence is 4.16 months. 14.8% patients had recurrent similar abdominal pain, and only 7.4% patients had recurrent acute appendicitis. Length of hospital stay had a statistically significant correlation with recurrence. The mean TC in the group with recurrent acute appendicitis was 12,500 and asymptomatic group who had a mean TC of 10678.28 which was statistically significant.
Conclusions: Conservative treatment is successful for majority of appendicular masses. A routine IA seems unnecessary. Asymptomatic patients can be followed up without IA. Most of the recurrences occur within the first 3 to 6 months. Length of hospital stay and total leucocyte count influenced the recurrence. IA may be considered in those who are prone for recurrence.

Keywords: Appendicular mass, Interval appendicectomy, Length of hospital stay, Leucocyte count

INTRODUCTION

Appendicitis is considered as the most common cause of acute abdomen in our surgical casualty and appendicectomy is the most common emergency surgery performed. The definite treatment of acute appendicitis is appendicectomy to avoid complications.[1] If timely appendicectomy is not done due to any reason 2-6% of the patients develop a mass as one of the early complications.[2-4] On the third day (rarely sooner) commencement of acute appendicitis, a tender mass can frequently be felt in right iliac fossa. An appendicular mass is the end result of a walled-off appendicular perforation and represents a pathological spectrum ranging from phlegmon to abscess.[2,3] This mass is composed of omentum, edematous caecal wall and edematous loop of ileum. In its natural course from 5th to l0th day, the mass either becomes larger and an

appendicular abscess results or it becomes smaller and subsides as the inflammation resolves.

Management of an appendicular mass can be done in three approaches. Initial conservative treatment followed by interval appendectomy six to eight weeks later, immediate appendicectomy and approaching only conservative treatment without interval appendicectomy.[5]Of these three, traditional initial conservative management is still a highly acceptable approach by many authors for appendicitis.[6-8]

Hence, this retrospective study was aimed to study the natural course of those patients presented with appendicular mass who were successfully treated by non-operative method, to find out the rate of recurrence in them, to analyze the possible factors related with the recurrence and to assess the need of routine interval appendicectomy.

METHODS

This study was conducted retrospectively on patients admitted with appendicular mass who were discharged after conservative treatment from department of general surgery in Medical College, Kottayam from 1st June 2005 to 31st May 2010. The study was conducted during the period 1st August 2009 to 31st July 2010.

All diagnosed cases of appendicular mass treated conservatively from 2005 June to 2010 June in the department of surgery were included in the study. Exclusion criteria were all patients with acute appendicitis without complications and all patients with other complications like appendix abscess and pelvic abscess.

Study procedure

Data of all appendicular mass patients were collected from medical records library. Patients were contacted through letters which includes a printed questionnaire and my contact number. Patients responded by either phone or questionnaire. Those patient having symptoms were reviewed and were evaluated by clinical examination. Patients who developed recurrent similar pain and those who underwent emergency appendicectomy later were taken as recurrence.

RESULTS

Total number of patients included in the study was 93. Of them 12 patients underwent interval appendicectomy (IA) and conservative treatment was taken by 81 patients (Table 1).

Table 2 presents the socio-demographic characteristics of the patients that received conservative treatment (n=81). Majority of the patients were young, with a mean age of 38.9yrs and male/female ratio was 0.8:1. Only 3 patents had diabetes and 6 patients had other co morbidities like hypertension and COPD. Pain (100%) and fever (74.04%) were the predominant symptoms, followed by vomiting (41%). Total leucocyte count ranged from 6900 to 16,600. Ultrasound was used for confirmation for 54% patients majority showed heterogeneous mass of size varying from 4 to 7 cms, no appendiculolith was mentioned. In the initial admission with appendicular mass, these patients were admitted for an average of 8 days ranging from 2 to 20 days.

Table 1: Number of patients participated in the study.

Total responded patients	N=93	Percentage (%)
Patients undergone interval appendicectomy (IA)	12	12.9
Total patients followed conservatively	81	87.1

Table 2: Sociodemographic characteristics of study participants.

Characteristics	Number of patients (n=81)	Percentage (%)
Mean age (in years)	38.9	
Male: female ratio	0.89:1	
Co-morbidities		
Diabetes	3	3.7
Hypertension and COPD	6	7.4
Symptoms		
Pain	81	100
Fever	60	74
Vomiting	33	41
Mean total leucocyte count (range)	10916.8 (6900-16600)	
USG done	44	53.4
Mean length of hospital stay (range)	8.02 days (2-20 days)	

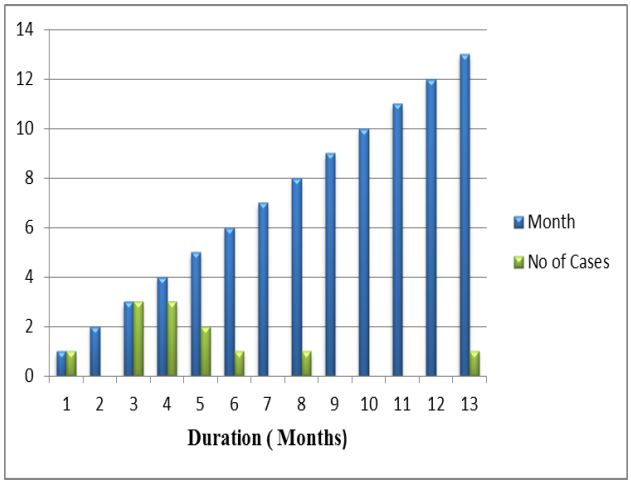

Figure 1: Time duration between resolution of mass and recurrence in patients (n=12).

Out of 81 patients, 12 patients had experienced pain in right iliac fossa. Average duration between resolution of mass and recurrence is4.16 months with a minimum period of 1 month to maximum of 13 months (Figure 1). Among them 6 (7.4%) patients developed recurrent acute appendicitis and had undergone emergency appendicectomy. Of those 6 patients, 4 patients had pain in the right iliac fossa region with 1 episode of severe pain and the other 2 patients experienced more than 1 episode of pain (Figure 2).

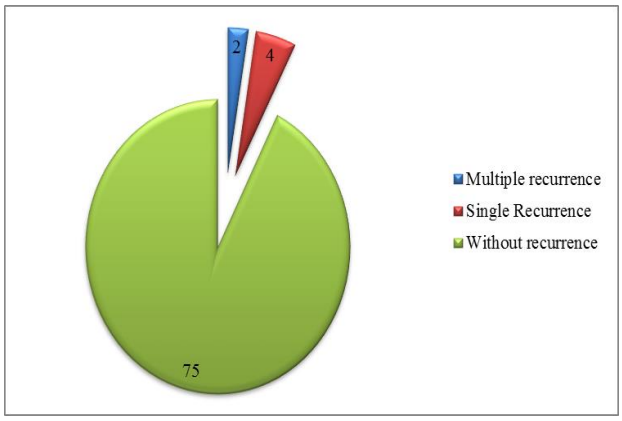

Figure 2: Number of patients who underwent for emergency appendicectomy with recurrence of pain.

Details of patients who underwent for emergency appendicectomy for recurrent a/c appendicitis was given in Table 3. Mean age of the patients was 38.5 years with male: female ration as 1:1. The mean value of total leucocyte count was 12,500 with mean length of hospital stay of 13.3 days.

Table 3: Sociodemographic characteristics of patients who underwent for emergency appendicectomy.

Characteristics	Number of patients (n=6)
Mean age (in years)	38.5
Male: Female ratio	1:1
Mean total leucocyte count	12,500
Mean duration between 1st admission to recurrence	5.6 months
Mean length of hospital stay (in days)	13.3 days

Patients were divided into four groups for comparing the possible factors associated with the recurrent right iliac fossa pain or episode of acute appendicitis. Group l: patients who developed recurrent RIF pain (12/81), Group 2: asymptomatic patients (69/81), Group 3: patients who developed recurrent a/c appendicitis (6/81), Group4: patients who did not developed recurrent a/c appendicitis (75/81).

Table 4 presents the comparisons of demographic and clinical characteristics variables between Group 1 and Group 2. Age is not a significant factor with increased risk of recurrence. Length of hospital stay has a statistically significant correlation with recurrence. Total leucocyte count on initial admission has a statistically significant correlation with recurrence of recurrent right iliac fossa pain.

Table 4: Comparison of variables between Group-1 and Group-2.

Variables	Group-1 (n=12)	Group-2 (n=69)	P value
Age	40.75±13.54	38.9±16.60	t=0.38, P=NS
Length of hospital stay	7.38±3.80	10.83±4.77	t=-2.79, P=0.009
Total leucocyte count	12891.67± 2029.98	10678.28± 3291.11	t=-2.249, P=0.04

Table 5 presents the comparisons of demographic and clinical characteristics variables between Group 3 and Group 4. No statistical significance was seen between age in relation to recurrence of appendicitis. Length of hospital stay on initial admission has a statistically significant correlation with recurrent appendicitis. No statistically significant correlation was noticed between total leucocyte count and recurrent episode of acute appendicitis.

Table 5: Comparison of variables between Group-3 and Group-4.

Variables	Group-1 (n=6)	Group-2 (n=75)	P value
Age	39.16±18.68	39.21±16.04	t=0.38, P=NS
Length of hospital stay	7.45±3.76	13.33±4.67	t=-3.6, P=0.05
Total leucocyte count	12500.00± 2546.37	10886.00± 3257.14	t=-1.18, P= NS

DISCUSSION

Appendicitis is one of the most common surgical problems in the population as a whole. About 2-6% of appendicitis presents as a palpable mass over the right lower quadrant of the abdomen. Appendicular mass is classically managed conservatively by the Oschner-Sherren regimen. The success rate of conservative management ranges from 76% to 97%.[9,10] The success rate in the present study was 85%.

In our study, a total of 93 patients who had successful conservative treatment for appendicular mass during a period of 5 years (2005-2010) were reviewed. In the

initial admission with appendicular mass, these patients were admitted for an average of 8 days ranging from 2 to 20 days and male/female ratio was 0.8:1. Majority of the patients were young, with a mean age of 38.9yrs, correspondingly the comorbid illnesses were also less. Only 3 patents had diabetes and 6 patients had other co morbidities like hypertension and COPD. Pain (100%) and fever (74.04%) were the predominant symptoms, followed by vomiting (41%). Total leucocyte count ranged from 6900 to 16,600. Ultrasound was used for confirmation for 54% patients majority showed heterogeneous mass of size varying from 4 to 7 cms, no appendicolith was mentioned. All patients were treated with the same protocol of nil oral, IV Fluids and antibiotics, commonly, cefotaxime and metronidazole. On discharge, all patients had relief of pain, mass subsided and were comfortably able to take oral feeds.

Out of the 93 patients, 12 patients underwent routine interval appendicectomy after 6-8 weeks. Rests of the patients, i.e. 81/93 were reviewed. 6 patients underwent emergency appendicectomy for recurrent episode of acute appendicitis, Another 6 patients had recurrent sub-clinical episodes with right lower abdominal pain of similar character, not associated with other classical features of acute appendicitis like fever or vomiting, and were managed conservatively.66% of them had only single episode and the rest had multiple episodes

So a total of 12 (14.8%) out of 81 patients had recurrent similar abdominal pain, and only 6/81 (7.4%) patients had recurrent episode of acute appendicitis. Previous retrospective studies of Kaminski et al and Lai et al reported recurrence rate of 5% and 25% respectively.[10,11] In a prospective study conducted by Youssef et al on 66 patients the recurrence rate reported as 17.4%.[12]

Average duration between resolution of mass and recurrence is 4.16 months with a minimum period of 1 month to maximum of 13 months. 83% patients had recurrence on or before 6 months which is also comparable with other studies. In the study by Youssuf et al, 77.8% of the recurrences occurred in the first 6 months and Hoffman et al in his study reported 66% of the recurrences within 2 years.[12,13] The patients who had recurrence were analyzed with respect to their age, sex, co morbidities, total count and length of hospital stay on initial admission Out of which age, sex and co morbid illness did not have any statistically significant correlation with recurrence. Kaminsky et al reported that the only factor associated with recurrence was sex.[10] Males were less likely to recur than females, whereas age, Charlson comorbidity index, type of appendicitis, or percutaneous abscess drainage had no independent influence on recurrence.

Total leucocyte count during the time of initial admission was a significant factor for recurrent a/c appendicitis The mean TC in the group with recurrent acute appendicitis was 12,500 and those who had recurrent subclinical episode was 12891.61 when compared to the asymptomatic group of patients who had a mean TC of 10678.28 which was statistically significant (P=0.04). The mean length of hospital stay on initial admission of patients who later developed recurrent appendicitis was 13 days, and the patients who later developed recurrent subclinical episodes was 10.8 days when compared to a mean of 7.3 days for those who did not develop recurrence. Length of hospital stay had a statistically significant correlation with recurrence (P=0.009). Length of hospital stay may be considered as an indirect indicator of the severity of a disease. Time to respond to conservative management is directly related to the chance of getting recurrence. This may be due to underlying causative factors related to the occurrence of appendicitis or mass, most common being an appendicolith, but in our study, those factors were not revealed in the initial evaluation.

CONCLUSION

The result of the study concludes that factors like age, sex and co-morbid illness failed to show statistically significant co-relation with recurrence of acute appendicitis. But the length of hospital stays and total leucocyte count at initial admission influenced the recurrence. IA may be considered only in selected patients after resolution of appendicular mass and to be considered only in those patients who are prone for recurrence. Hence, initial conservative treatment will be considered as successful management for majority of patients with appendicular mass.

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