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Acute Appendicitis and Its Management: A Hospital Based Study

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ABSTRACT

Background: Acute appendicitis is the most common acute surgical condition of the abdomen, which if complicated by perforation or peritonitis has high morbidity and mortality.
Aim: The aim of this study is to analyze the presentation, diagnosis and management of acute appendicitis along with the role of conservative management in uncomplicated cases.
Materials and Methods: This study was conducted in Govt. Medical College Jammu over a period of one year w.e.f. September 2017 to August 2018 and included 120 patients. Diagnosis in the suspected patients was based on history, clinical examination coupled with laboratory investigations and imaging modalities like ultrasound/ CT Scan wherever required.
Results: 120 patients of acute appendicitis were treated over the period of one year at our center. Abdominal pain was the most common and constant presentation seen in 112 patients followed by vomiting (82), history of fever (60), history of constipation and distension (20) and another 12 had history of diarrhoea. Six patients (5%) responded favorably to conservative management.
Conclusion: Acute appendicitis is a common surgical emergency requiring detailed history and meticulous examination coupled with X-ray and ultrasonography for diagnosis. Appendectomy is the standard procedure of choice and wherever feasible laparoscopic appendectomy offers the advantage of less pain, short hospital stay, earlier return to work and overall cost.

Keywords: Acute Appendicitis, Appendectomy, Alvarado Score, Phlegmon, Abscess

INTRODUCTION

Acute Appendicitis is a common surgical problem which requires immediate attention. The lifetime risk is slightly more in males (8.6%) as compared to females (6.7%). Appendicitis is most commonly seen in the second and third decades of life with a male: female ratio of 1.4:1[1].

However, females undergo appendecectomy more frequently than males(23%vs12%).Non-operative management using antibiotics has been proposed for uncomplicated appendicitis as well as for complication like phlegmon [2,3]. It has been noted that amount of lymphoid tissue present in appendix has some relation with the incidence of appendicitis. Appendicitis is particularly common amongst high and middle socio-economic class. Departure from a diet rich in cellulose to one rich in meat may be one of the many contributing factors. Familial susceptibility, race and sex may be the other contributory factors.

Acute appendicitis, pathologically is broadly divided into two types: obstructive and non-obstructive. In non-obstructive appendicitis, inflammation usually commences in the mucous membrane and less often in the lymphoid follicles. Inflammation in appendix may terminate intoresolution, ulceration, suppuration, fibrosis or gangrene. In many cases

infection never progress beyond mucous lining (catarrhal appendicitis) and if infection reaches loose submucous tissues, then it progresses rapidly jeopardizing the vascular supply to distal part of appendix. Gangrene may ensue either by occlusion due to inflammation or thrombosis. Non-obstructive appendicitis may progress slowly giving ample time for the protective barriers to form with the result that peritonitis is localized.

Obstructive acute appendicitis is more common of the two types. About two out of every three cases belong to this type. The site of obstruction can be in the lumen (foreign body, faecolith or parasites); in the wall (inflammation, stricture or carcinoma) or outside the wall (adhesions, kink). In obstructive appendicitis inflammatory products get pent up and inflammation progresses rapidly either to gangrene or perforation. Perforation occurs usually at the site of impacted faecolith and ensues a widespread peritonitis as the escaping purulent and gaseous contents are under high pressure. The menace of appendicitis lies in the frequency with which peritoneal cavity is infected i.e. by perforation or by transmural migration of the bacteria. A freely dangling inflamed appendix has obviously more chances of perforation and ensuing diffuse peritonitis.

Diagnosis of acute appendicitis is based on detailed history, clinical examination coupled with laboratory investigations and imaging modalities like ultrasound/ CT Scan. Various diagnostic scoring systems have been proposed which aim to provide the clinical probability that patient has acute appendicitis. Most common scoring system is Alvarado score (also called MANTRELS score)[4]. Other scoring systems include Paediatric Appendicitis Score(PAS)[5], Appendicitis Inflammatory Response Score(AIR)[6], Raja Isteri Pengiran Anak Saleha Appendicitis Score (RIPASA)[7] and the Adult Appendicitis Score(AAS)[8]. Alvarado scoring system is based on symptoms, signs and laboratory investigations as shown in the table.

ALVARADO(MANTRELS)	CRITERIA SCORE
Migration of pain	1
Anorexia	1
Nausae / Vomiting	1
Tenderness in right iliac fossa	2
Rebound tenderness	1
Elevation of temperature(>37.3°c)	1
Leucocytosis	2
Shift to Left (75%)	1
TOTAL SCORE	10

Score Interpretation:-

Score 1-4 very unlikely
Score 5-6 AA, observation
Score 7-8 AA probable, operate
Score 9-10 AA definite, operate

Following diagnosis, acute appendicitis needs intervention .All patients with uncomplicated appendicitis will not progress to perforation and many will show spontaneous resolution[9]. Although mortality rate has decreased in complicated appendicitis but post operative complications are common[10]. Early diagnosis with prompt appendecectomy has been the standard of care since1880s which was described by Fitz and McBurney. Some authors have advocated delaying surgical intervention in uncomplicated appendicitis as it may decrease the negative appendecectomy rate (27% in one publication)[11] and may actually have improved patient outcome[12]. Complicated appendicitis need immediate resuscitation and surgery to avoid the high morbidity and mortality associated with delay.

MATERIAL AND METHOD

This study was conducted in Govt. Medical College Jammu over a period of one year w.e.f September 2017 to August 2018 and included 120 patients. The purpose of this prospective observational study was to analyze the clinical presentation, diagnosis, and management of acute appendicitis along with its complications. Only the patients admitted with diagnosis of acute appendicitis were included in the study. Data were analysed

for age, gender, clinical features and outcome of management.

METHODOLOGY

All patients were put to detailed history taking and a complete clinical examination including digital rectal examination was done. Baseline investigations like Hb, TLC, DLC, BT, CT, serum electrolytes, RFTs, LFTs including serum protein, serum albumin, X-ray chest and ECG were done. Diagnosis in the suspected patients was supported by x-ray and ultrasonography findings. CT scan was done in cases with diagnostic uncertainty or complicated appendicitis like obstruction. A written informed consent was obtained from all the patients who needed any surgical procedure.

MANAGEMENT

All the patients were managed by keeping them nil by mouth, nasogastric aspiration, intravenous fluids and antibiotics. Patients who had abdominal guarding or rigidity or those who developed them in due course were taken for emergency open appendecectomy.

POST-OPERATIVE CARE AND EVALUATION

Patients who underwent surgical intervention were kept nil per oral with intravenous fluid and antibiotics for 2-3 days with or without nasogastric suction. Orals were started when bowel activity in the form of bowel sounds and passage of flatus or stools was present. Immediate complications were noted and dealt accordingly. Patient was discharged after passing stools for a day or two in the hospital, with the advice of semisolid diet.

RESULTS

This study was conducted in Govt. Medical College Jammu over a period of one year w.e.f September 2017 to August 2018 and included 120 patients. The purpose of this prospective observational study was to analyze the clinical presentation, diagnosis, and management of acute appendicitis along with its complications.

120 patients of acute appendicitis were treated over the period of one year at our center. 75(62.5%) were males and 45(37.50%) were females. The youngest among male patients was 3 years old and eldest was 70 years old. Similarly, youngest amongst females was 5 year old and eldest 64 years old.

TABLE 1: Age/ Sex distribution of patients with Acute appendicitis.

Age Group(in years)	Males	Females
Upto 10 years	10	6
11-20	21	11
21-35	19	16
36-50	13	8
51-65	9	4
>65 years	3	0
TOTAL	75(62.5%)	45(37.50%)

Abdominal pain was the most common and constant presentation seen in 112 patients followed by vomiting (82), history of fever (60), history of constipation and distension (20) and another 12 had history of diarrhoea. The clinical presentation of patients is depicted in table 2 below.

Table 2: Distribution of patients according to clinical presentation.

Clinical symptom	Males patients	Female patients	Total
Abdominal pain	72	40	112
Vomiting/Nausea	44	38	82
Fever	37	23	60
Constipation & Distention	13	7	20
Diarrhoea	6	2	8
Dysuria/ Increased frequency	4	3	7

Diagnosis in patients was made on detailed history coupled with thorough clinical examination along with laboratory investigations and ultrasound imaging. Doubtful cases were subjected to CT scan abdomen. In our study 36 patients (Males=15, Females=21) had to undergo CT scan abdomen to arrive at a diagnosis.

114(95%) patients after arriving at the diagnosis of acute appendicitis underwent appendecectomy. 26 patients who arrived late to hospital after a gap of 3

to 4 days had diffuse peritonitis and needed immediate resuscitation and surgery.

Six patients (5%) with the diagnosis of appendicitis on imaging, whose surgery was delayed as they had mild symptoms responded favorably to conservative management which include Nil per oral, intravenous fluids, antibiotics with regular monitoring.

Post-operative complications were noted and dealt accordingly. Table 3 shows the distribution of complications noted. 5 patients did not need any surgery and were when symptoms subsided.

Table 3 : Distribution of patients according to complications (n=115)

Complications	Number of patients	Percentage
Faecal fistula	0	0.00%
Right inguinal hernia	0	0.00%
Wound dehiscence	12	10.00%
Wound Hematoma	5	4.16%
Intra-abdominal collection	1	0.83%
Re-admission	7	5.83%
Intestinal obstruction (adhesions)	4	3.33%
Main wound infection	20	16.66%

Postoperatively, twenty patients had wound infections, 12 had wound dehiscence (partial) and 5 had wound haematoma. Most of them had delayed presentation and had perforated appendix with purulent fluid inside peritoneal cavity. All were managed conservatively with regular dressings and secondary sutures wherever required.

DISCUSSION

Acute appendicitis is a common entity with a lifetime risk of about 8.6% in males and 6.7% in females. In our study, out of 120 patients of acute appendicitis 75(62.5%) were males and 45(37.50%) were females. Most of the patients were in the age group of 10-35 years and range from 3-70years. These are in accordance with the results as reported in other studies [1].

In our study abdominal pain was the most common presentation which was seen in 112 patients followed by vomiting (82), history of fever (60), history of constipation with distension (20) and diarrhea(12). Symptoms of appendicitis may mimic other conditions making diagnosis difficult.

In our study, diagnosis was made on detailed history coupled with thorough clinical examination along with laboratory investigations and ultrasound imaging. Alvarado in 1986 formed a clinical scoring system based on ten variables for the diagnosis of acute appendicitis. It was commonly used for predicting the diagnosis of acute appendicitis [13]. Alvarado score may also aid in diagnosing appendicitis when ultrasound fails to viualise the appendix, thereby decreasing the number of CT scans [14,16]. CT scan abdomen was done in 36 patients in our study to arrive at a diagnosis. It has been reported in a study that CT scan has a sensitivity almost equivalent to MANTRELS criterion but when clinical assessment is reinforced with CT scan, both sensitivity as well as specificity are increased[15].

In our study, 114 (95%) patients after arriving at the diagnosis of acute appendicitis underwent appendecectomy. Six patients (5%) with mild symptoms responded favorably to conservative management. Delaying surgical intervention in uncomplicated appendicitis may actually decrease the rate of negative appendecectomy [11] and improve patient outcome[11,12]. Non-operative treatment has been advocated in some studies with varying results for the management of uncomplicated acute appendicitis using antibiotic therapy [17,18].

In our study, twenty patients had wound infections, 12 had wound dehiscence (partial) and 5 had wound haematoma. Most of them had delayed presentation and had perforated appendix with purulent fluid inside peritoneal cavity. These results are in accordance with various studies which show wound infection range between 5% for uncomplicated appendicitis to 20% for complicated appendicitis [19,20]. Laparoscopic appendicectomy definitely offers advantage over open appendicectomy wherever such facility and expertise is available.

CONCLUSION

Acute Appendicitis, a common surgical condition needs immediate attention so as to curtail the mortality and morbidity associated with delay. Non-operative management of acute appendicitis with antibiotic therapy may be successful in selected cases who have uncomplicated appendicitis but with a risk of recurrence in some. Regarding surgical management, laparoscopic appendecectomy should be the first choice where such facility and expertise is available. It clearly has the advantage in obese, elderly and patients with comorbidities along with the benefit of overall low cost, less pain, early return to work and low incidence of wound infection. Open appendecectomy is still considered as the procedure of choice in complicated appendicitis, pregnant females and also in children in whom no major benefits of laparoscopic appendecectomy are seen. So, from our study it is concluded that operative intervention remains the mainstay of treatment in acute appendicitis, though in selected cases non –operative antibiotic therapy under close monitoring may help in resolution but with the risk of recurrence in some.

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