Acute Appendicitis – Incidence of Perforated Appendicitis

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The prospective study was carried out in West Surgical Ward, Mayo Hospital, Lahore during the year 2003 consisting of 200 patients. There was slight preponderance of males 102(51%) to females 98(49%). Age ranged from 13-75 years with the mean of 28.2 years. Appendicectomy was done in all patients by making gridiron incision in 165(82.5%), muscle cutting in 15(7.5%), Lanz's incision in 16(8%) and right Para-median in 4(2%) patients. Regarding position of the appendix, retroceacal was the most common, found in 160(80%) and pelvic position in 31(15.5%) patients. Perforated appendix was delivered in 10(5%) patients with male to female ratio 4:1. Post-operative complications observed in the series were wound infection in 11(5.5%), prolonged ileus in 2(1%) and gastritis in 2(1%) patients. All the complications were managed according to their own protocol. No mortality was recorded in the series.

Key words: Acute appendicitis, perforated appendicitis, appendicectomy, infection.

Vermiform appendix once considered as vestigial organ is now known as an important secretory organ of gut immune system. The most common surgical emergency of the organ is acute appendicitis. The decision to explore a patient with this disease is based mainly on the disease history and physical findings, so diagnostic errors are common[1]. New diagnostic aids like CT scan, USG, MRI, diagnostic laparoscopy, C-reactive protein and leukocyte scintigraphy are quite expensive and are not widely available, clinical diagnosis therefore remains the cornerstone of the management[2]. So the diagnosis remains an enigmatic challenge and a reminder of an art of clinical acumen and surgical diagnosis. Although clinical examination including detailed disease history is often stressed as an essential part of diagnosis, with the laboratory findings commonly thought of as less important because of their putative discriminatory capacity[3, 4].

Diagnostic inaccuracy, longer duration of illness before admission and extremes of age-small children and elderly are among major factors leading to increased rate of perforation[5]. The perforation rate in infancy is about 50%, it falls steadily there after as age increases and there is again steadily rise to 50% beyond the age of 70 years[6]. The incidence of perforated appendicitis varies from 16-20%[7, 8].

Aims and Objectives

The main aim and objective of the study was to highlight the rate of perforated appendicitis in the patients with acute appendicitis and comparison with the studies conducted elsewhere.

Material and Methods

The prospective study was carried out in West Surgical Ward, Mayo Hospital, Lahore consisting of 200 cases during the year 2003. All the patients above 12 years of age (our emergency caters patients above 12 years of age) who were admitted through Accident and Emergency Department with the diagnosis of acute appendicitis in whom acute appendicitis with or without perforation found per-operatively were included in the study. The patients with appendicular mass, appendicular abscess and negative appendicectomies were excluded from the study. The diagnosis was made on the basis of history and physical findings and supplemented by total leukocyte count, differential leukocyte count, urine examination and x-ray abdomen in patients having suspicion of perforation. Modern tools like USG, CT scan, MRI and laparoscopy were not available in our local setup. Drain was placed in all patients with perforated appendix after appendicectomy and mopping the area. Skin was left open in these patients. Antibiotics and analgesics were given to all patients post-operatively and kept nil by mouth till they had bowel sounds/passed flatus. Hospital stay varied from 1-8 days with the mean of 2.1 days.

Results

During the study period, a total number of 200 patients were admitted through Accident and Emergency Department with the diagnosis of acute appendicitis with or without perforation.

Age of the patients ranged from 13-75 years with the mean of 28.2 years. Males were slightly preponderance to females as in table 1.

Table 1: Age and sex distributation

Age in years	n=200	Male (n=102)	Female (n=98)
13-20	78	32	46
21-30	76	45	31
31-40	31	15	16
41-50	10	6	4
>50	5	4	1

Regarding symptoms and signs, the duration of pain was less than 24 hours in 70(35%) and more than 72 hours in 61(30.5%) patients, complaint of vomiting in 17(8.5%) patients, more than 101°F temperature was recorded in 23(11.5%) patients as in table 2. In the series 2(1%)

patients were diabetic, 2(1%) were pregnant and 1(0.5%) patient had ulcerative colitis.

Table 2: Symptoms/signs/laboratory findings

Symptoms/signs/laboratory findings		n=200	%age
Duration of pain:			
<24hours		70	35
24-48 hours		69	34.5
>48 hours		61	30.5
Vomiting		17	8.5
Pulse <90 per minute		90	45
90-100 per minute		71	35.5
>100 per minute		39	19.5
Temperature	<99°F	144	72
	99-101°F	33	16.5
	>101°F	23	11.5
Tenderness		200	100
Rebound tenderness		200	100
Total leukocyte	<7 x 10^9 /liter	41	20.5
Count	7-10 x 10^9 /liter	95	47.5
	>10 x 10^9 /liter	64	32

Appendicectomy was done in all patients by making gridiron incision in 165(82.5%), muscle cutting in 15(7.5%), Lanz's incision in 16(8%) and right Para median in 4(2%) patients. Perforated appendix was found in 10(5%) patients as in table 3.

Table 3: Perforation site/sex distribution

Perforation site	n=200	Male n=102	Female n=98
Base	3	2	1
Middle	5	4	1
Tip	2	2	-

Out of these 10 patients, the cause of perforated appendix in 7 patients was a longer duration of illness, one elderly and 2 were young patients.

The most common position of the appendix found per-operatively was retrocaecal in 160(80%), next was pelvic in 31(15.5%) patients. Among rare positions, paracaecal was in 5(2.5%), preileal in 3(1.5%) and postileal in 1(0.5%) patient.

All the patients were observed keenly for early detection of post-operative complications if any and these were managed according to their severity as in table 4.

Table 4: Post-operative complications and their management

Complication	n=200	Management
Respiratory tract infection	18	Conservative
Wound infection	11	Open & dressing
Prolonged ileus	2	Suck & fluids
Gastritis	2	Omeprazole

No mortality was detected in the series.

Discussion

Immediate appendicectomy has long been the recommended treatment of acute appendicitis because of the known progression to rupture. The policy of precautionary appendicectomy had been a tradition and surgeons in training believed their experienced teachers when they advised that "delaying appendicectomy to achieve greater diagnostic accuracy.... must cause more perforations"[9]. Patients with perforated appendicitis will often have a longer duration of symptoms, high grade fever, higher white cell count and raised C-reactive protein levels[10, 11].

Although the perforation rate in infancy is 50%, it falls steadily thereafter and between 10 and 40years of age, it is nearly 10%, there is then a steady rise to 30% at 60 years of age and beyond 75 years, the perforation rate returns to 50%[6]. Studies carried out all over the world showed perforation rate as low as 3.7%[12] and as high as 45.5%[13] but majority of the studies had perforation rate from 18-20%[8, 14]. In the study, the rate of perforated appendicitis was 5% which is comparable with the study conducted by Kraemer M, et al[15] where it was18% in their series of 519 patients.

Morbidity parallels mortality being precipitously increased by rupture of appendix and to a lesser extent by old age. Early post-operative complications in perforated appendicitis include prolonged ileus, intra-peritoneal abscesses, faecal fistula, wound infection, early adhesive bowel disease and among late complications adhesive bowel disease, incisional hernia and right inguinal hernia are found. In the series, post-operative complications recorded were 16.5% which is comparable with the study reported by Kozar RA, et al[16] that showed 47% post-operative complications.

There is no substitute for skill in interviewing the patients and eliciting the physical signs. Active observations offer a safe and effective method of identifying most of the cases. Clinical skill to diagnose the disease earlier, frequent visits of the patient to a doctor, earlier presentation of the patient, easy availability of USG and antibiotics especially metronidazole may play a major role in reducing the rate of perforated appendicitis. In pregnancy the fetal mortality increases from 3-5% with early appendicitis to 20% with perforated appendicitis[16]. So in suspected/borderline cases, it is better to open and do appendicectomy rather than wait and see to avoid the risk of perforation especially in small children and elderly because the modern tools to increase the diagnostic accuracy of acute appendicitis are not available in our local setup.

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