

Acute Appendicitis – Incidence of Negative Appendicectomies.

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A prospective study was conducted on 100 consecutive patients who were diagnosed as acute appendicitis in West Surgical Ward, Mayo Hospital, Lahore in the year 2001. Fifty-six patients (56%) were between the age of 13 to 20 years. Male to female ratio was equal in the series. Appendicectomy was done in all patients. Reterocaecal position was found in 72% cases. The incidence of negative appendicectomies was 11% and all these patients were female. Postoperative complications observed were wound infection (5%), respiratory tract infection (4%), acid peptic disease (2%) and haemorrhage (1%). No mortality was found in the study.

Key words: Pain right iliac fossa, Acute appendicitis, Appendicectomy.

The human vermiform appendix is usually referred to as a vestigial organ by most with no known function. Now, currently available evidence suggests that the appendix is a highly specialized part of the alimentary tract. The appendix also participates in the secretory immune system in the gut. Appendicectomy produces no detectable defect in the functioning of immune system. Thus, the human appendix is a useful, though not indispensable, immunologic organ. The importance of appendix in surgery is due only to its propensity for inflammation that results in a clinical syndrome known as acute appendicitis. Acute appendicitis is the most common cause of an acute abdomen in young adults and as such the associated symptoms and signs have become a paradigm for clinical teaching. The diagnosis of acute appendicitis is still difficult and very probably the most diagnostic problem in clinical surgery. The accuracy of diagnosis of acute appendicitis has improved only marginally in recent decades¹. The classic triad of a history compatible with acute appendicitis, pain at McBurney's point and leukocytosis has a diagnostic accuracy rate of less than 80% and even extraordinary advances in modern radiographic imaging and diagnostic laboratory investigations, the accuracy does not usually reach 90%^{2,3}. Still, the diagnosis of acute appendicitis remains essentially clinical requiring a mixture of observation, clinical acumen and surgical science. In an age accustomed to early and accurate preoperative diagnosis, acute appendicitis remains an enigmatic challenge and a reminder of the art of surgical diagnosis.

Patients and methods

The main aim of the study was to highlight the accuracy of the clinical diagnosis of acute appendicitis and the ratio of negative appendicectomies and then compare the results with the studies conducted elsewhere. This prospective study was conducted in West Surgical Ward, Mayo Hospital, Lahore in the year 2001. All the patients above twelve years of age who presented with history of pain in right iliac fossa were included in the study. The patients having mass in right iliac fossa or perforated appendix were excluded from the study. All the patients were

diagnosed as acute appendicitis on the basis of history and clinical examination and diagnosis was supplemented by laboratory investigations i.e. total leukocyte count, differential leukocyte count and urine examination for pus cells and red blood cells. Antibiotics and analgesics were given to all patients postoperatively and were kept nil by mouth till they passed flatus. Hospital stay varied from 1 to 7 days with the mean of 2.07 days.

Results

During study period, a total of one hundred consecutive patients were admitted through Accident and Emergency Department with the complaint of pain in the right iliac fossa. Age of the patients ranged from 13 to 52 years. Male to female ratio was equal in the series as shown in table 1.

Table 1: Age and Sex Distribution

Age in years	n=	Male	Female
13—20	56	25	31
21—30	32	20	12
31—40	8	2	4
41—52	4	3	1

Duration of the pain was 12 to 36 hours in 41 patients (41%). Vomiting was associated in 30% of patients. Majority of the patients (69%) had pulse rate between 80 to 100 per minute. Tenderness and release sign was present in all patients. Dunphy's sign, Rovsing sign, Psoas test and Obturator test were present in 39, 32, 31 and 14% respectively. Symptoms and signs are given in table 2.

Appendicectomy was done in all patients by making muscle splitting incision in 80% cases and muscle cutting incision in 20% cases. The position of appendix found preoperatively is shown in table 3.

Acutely inflamed appendix was found in 89% cases and Lilly white in 11% cases. Omentum in right iliac fossa was present in 41% cases. Operative findings in right iliac fossa are shown in table 4.

Postoperative complications observed in the series were upper respiratory tract infection, wound infection and haemorrhage. No mortality was found in the study. Postoperative complications with their management are given in table 5.

Table 2: Symptoms and Signs

Symptom / Sign		n=	%age
Duration of Pain	<12 Hours	30	30
	12 to 36 Hours	41	41
	>36 Hours	29	29
Vomiting		30	30
Fever		8	8
Pulse	< 80/minute	10	10
	81 to 100/minute	69	69
	>100/minute	21	21
Temperature	98.6 °F	59	59
	98.7 to 100 °F	30	30
	>100 °F	11	11
Total leukocyte count	<7 x 10 ⁹ /liter	21	21
	7 to 10 x 10 ⁹ /liter	42	42
	> 10 x 10 ⁹ /liter	37	37

Table 3: Position of appendix

Position	n=	%age
Reterocaecal	72	72
Paracaecal	10	10
Pelvic	9	9
Preileal	5	5
Postileal	4	4

Table 4: Operative findings

Findings	n=	%age
Acutely inflamed appendix	89	89
Lilly white appendix	11	11
Ovarian cyst (right)	5	5
Ectopic pregnancy	1	1
Salpingitis (right)	1	1
Omentum	41	41

Table 5: Postoperative complications with management

Complication	n=	%age	Management
Wound infection	5	5	Conservative
Respiratory tract infection	4	4	Conservative
Acid peptic disease	2	2	Conservative
Haemorrhage	1	1	Reexploration

Discussion

The appendix is a mysterious structure with no known function, at least in adults. The appendix varies from 2 to 20 cm in length, the average being about 9 cm⁴. The diagnostic accuracy of acute appendicitis is not 100% even in this modern era and depends on history, clinical findings, laboratory tests, namely total leukocyte count, C-reactive protein, urine examination and radiological techniques such as ultrasonography, computer tomography, radionuclide scanning and laparoscopy⁵. Appendectomy is the most frequently performed urgent abdominal operation and often the first major procedure performed by a surgeon in training.

The peak incidence of acute appendicitis is in early adult life. In the study age ranged from 13 to 52 years with the mean of 22.17 years. This coincides with the

study conducted by Hallan S, et al⁶ in which mean age was 22 years ranged from 3 to 86 years. Overall male to female sex ratio was equal with 2.5: 3.1 from 13 to 20 years of age. This percentage coincides with the study conducted by Atanassov L D, et al⁷.

All the patients presenting with pain in right iliac fossa associated with vomiting in 30% and fever in 8% cases. Tenderness, rebound tenderness was present in all cases, Dunphy's sign in 39%, Rovsing sign in 32% cases, Psoas and Obturator test in 31 and 14% cases respectively. All the physical findings are in resemblance with the study conducted by O'Connell PR⁸. Total leukocyte count was more than 10x10⁹/litre in 37% of cases and 59% cases were afebrile. This was in comparison with the study conducted by Middleton S B, et al⁹ where the total leukocyte count was more than 10x10⁹ /liter in 63% cases.

Appendectomy was done in all patients by making muscle splitting incision in 80% cases and muscle cutting incision in 20% cases. The caecum was identified by the presence of tinea coli and after withdrawing it with the swab, appendix was found inflamed in 89% cases and lily white in 11% cases. In the series, the position of appendix was reterocaecal in 72%, paracaecal in 10% pelvic in 9%, preileal and postileal in 5 and 4% cases respectively. This study is in comparison with the study conducted by Wakeley CPG¹⁰ where he noted reterocaecal in 65.28%, pelvic in 31.01%, subcaecal, preileal and postileal in 2.26%, 1% and 0.4% cases respectively. On histo-pathology, mild inflammation involving the mucosa was found in 11% cases and moderate to acutely inflamed appendix involving all the layers, in 89% cases. This is in comparison with the studies conducted by Gronroos JM, et al², Lewis FR, et al¹¹, Anderson RE, et al¹², and Izbicki JR, et al¹³, where they found acute appendicitis in 79% and 60 to 70% cases respectively.

All the patients with negative appendectomy were female (100%). This compare with the study conducted by Kozar RA, et al¹⁴, where they found negative appendectomies in 65% female patients.

Postoperative complication rate noted in the series was 12% and included respiratory tract infection, wound infection, haemorrhage and acid peptic disease. This percentage coincides with the study conducted by Styrd J, et al¹⁵, where the postoperative complication rate was 11.9%. All the patients were managed conservatively except one patient in whom re-exploration was done to secure haemostasis. No mortality was found in the series. This is in comparison with the study conducted by Baigrie RJ, et al¹⁶, they observed the mortality rate of 0.24%.

High diagnostic accuracy is required for patients with suspected acute appendicitis as negative appendectomy carries a significant morbidity. There is greater risk for abdominal adhesions after appendectomy for healthy appendix as compared with that of acute appendicitis. History, clinical examination, total leukocyte count, urine examination and ultrasonography may help to

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achieve a more accurate diagnosis. Even doing diagnostic laparoscopy, radionuclide imaging, Barium enema and CT scan, our diagnostic accuracy remains below 90%. In our local setup keeping in view the available facilities in emergency department, our main reliability is on history, clinical examination, total leukocyte count and urine examination. So the diagnosis is mainly clinical one in our setup. Ultrasound, CT scan and laparoscopy are not available in most of our emergency departments.

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