CHAPTER IV

RESULTS

RESULTS

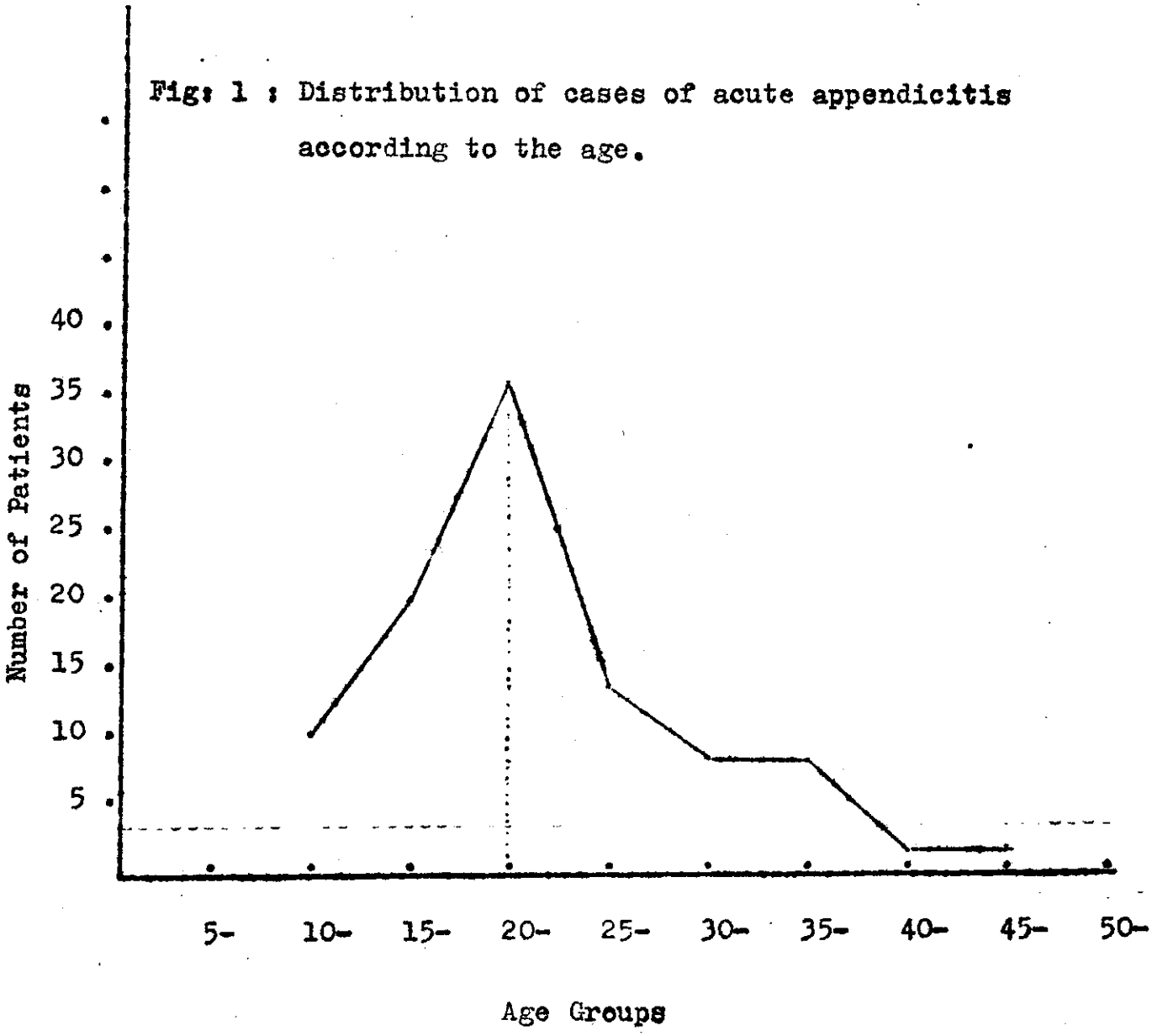
1- AGE INCIDENCE

The cases were classified according to their ages into 8 groups. The youngest patient was 12 years of age, the oldest one was 45 years of age.

Table (1) Distribution of cases according to age

Age Groups	Number of Patients
10-	10
15-	20
20-	36
25-	14
30-	9
35-	9
40-	1
45-50	1

Fig: 1 : Distribution of cases of acute appendicitis according to the age.



It is clear from table (1) and Fig (1) that the highest incidence of acute appendicitis is at the age group 20 - 25 years (36%), then the incidence declines gradually as the age advances. The lowest incidence being at the age groups 40- & 45 : 50 years (1%)per each.

2- SEX INCIDENCE:

Table (2) Distribution of cases of acute appendicitis according to the sex.

Sex	Males	Females
Number of the patients	55	42

The males are slightly more affected than females with male to female ratio of (7 : 5).

3- TYPE OF PATIENTS:

As the hospital is free and general so most of the admitted cases are of the poor class and from the rural areas.

4- OPERATIVE FINDINGS:

Every case was subjected to the following study during operation:

a- Position of the appendix.

b- Signs of inflammation.

c- Signs of obstruction.

d- Signs of complications.

a - Position of the appendix

From this survey we tabulate the results in a descending grade pattern.

Table (3) Distribution of the cases of acute appendicitis according to the position of the appendix.

Position of the appendix	No.of cases	Percentage
Retro-caecal	63	63%
Pelvic	28	28%
Para-colic	3	3%
Sub-hepatic	3	3%
Sub-caecal	2	2%
Post-ileal	1	1%

b- Signs of inflammation

In all cases undergoing appendectomy the severity of the disease was assessed at operation and graded and tabulaed as follows:

Table (4) Distribution of cases according to degree of inflammation.

Grade	Operative findings	No.of cases	%
1	Normal appendix	10	10%
2	Acute catarrhal appendicitis	17	14%
3	Acute auppurative appendicitis without perforation	45	45%
4	Gangrenous appendicitis without perforation.	21	21%
5	Gangrenous appendicitis with perforation		
	- Local Peritonitis	1	1%
	- General Peritonitis	4	4%
6	Appendicular mass	2	2%
	Total	100	

c- Obstructed appendieitis

Table (5) Relationship between the severity of inflammation and signs of obstruction.

Severity of Inflammation	No of Patient	Obst app.		Non obst. app.	
		No of pat.	%	No	%
Acute catarrhal.	17	3	17.6%	14	82.4%
Acute supprative.	45	32	73.3%	13	26.7%
Acute gangrenous.	28	28	100%	-	-
Total	90	63	70%	27	30%

Table (5) showed that out of the 17cases of acute catarrhal appendicitis, there were only 3 cases (17.6%) obstructive appendicitis, but out of the 45 cases of suppuraive appendicitis, there were 32 cases (73.3%) obstructive appenditicitis. While all the 28 gangrenous cases were found in obstruction.

d- Signs of complications

Two cases out of the 100 cases subjected to surgery were complicated by mass formation, both of the two cases could not be detected preoperatively and only detected during operation both cases were manipulated upon and appendectomy had been done.

One cases was complicated by perforation at the tip of the appendix resulting in local peritonitis.

4 cases were complicated by perforation with generalised peritonitis, two out of the four had been perforated at the base of the appendix and the remaining two had been perforated at the middle third of the appendix.

Table (6): Distribution of cases according to rise in temperature.

Temperature Temperature	No. of Cases
36.5	4
37	19
37.5	50
38	18
38.5	4
39	2
39.5	3
40	-
41.5	

Fig: (62) Distribution of cases according to rise in temperature.

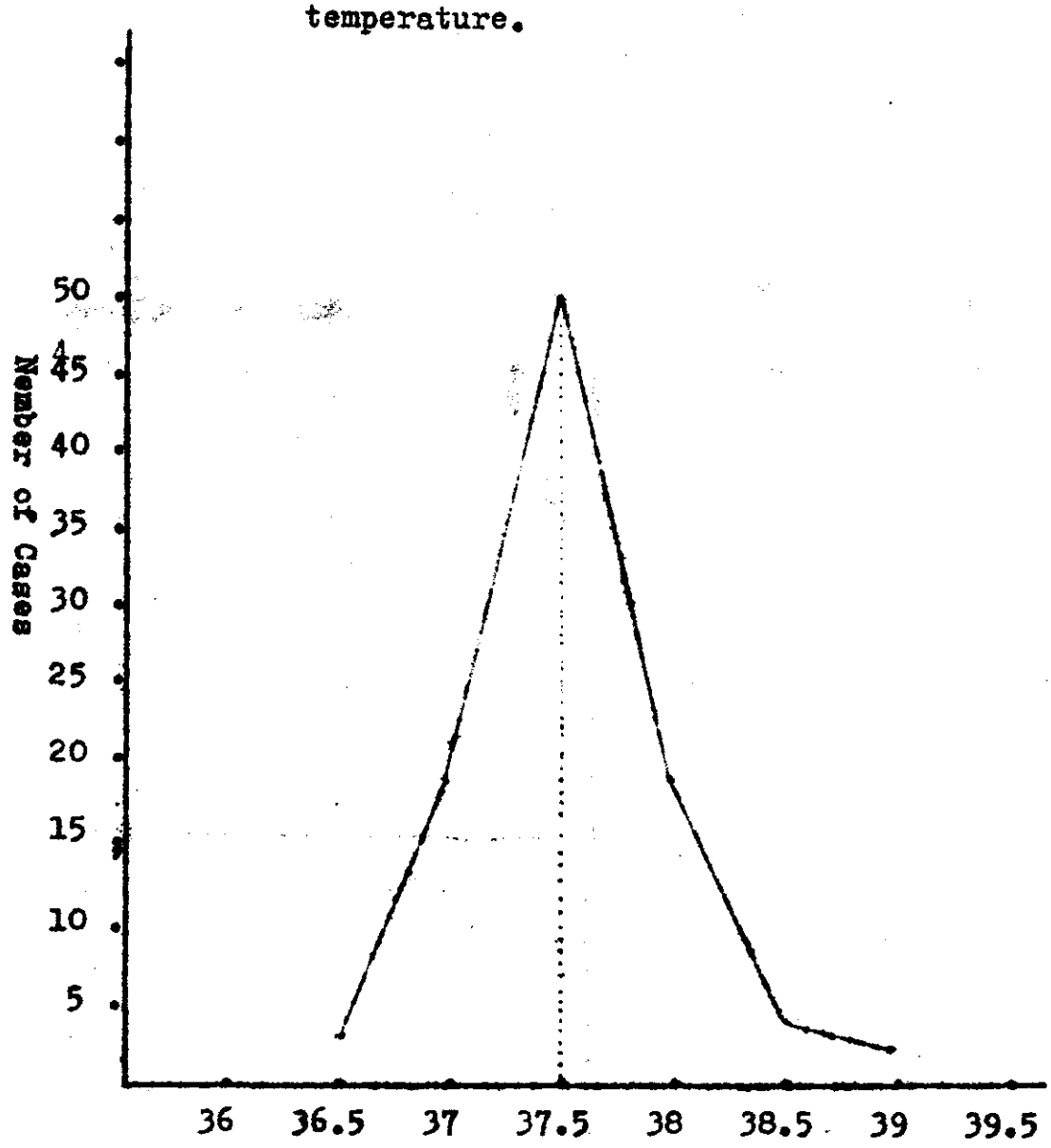


Table (7) Total and differential leucocytic count in appendicitis and non-appendicitis cases.

Total L.C.	Differential Neutrophils	No. of cases	App.		Non app	
			No	%	No	%
Less than/10,000/mm	Normal	13	6	46.1%	7	53.9%
	High.	9	8	88.9%	1	11.1%
More than/10,000/mm	Normal	6	6	100 %		
	High.	72	70	97.2%	2	2.8%
Total		100	90		10	

N.B: The upper limit of the total leucocytic count is 10,000/ mm^3 according to Hardison (1968).

The upper limit of neutrophils is 75% according to Dacies & Lewis (1968).

Table (7) showed that there were 22 cases had leucocytic count less than 10,000/cu.mm., 13 cases out of them (59%) had normal neutrophil count, of which 6 cases proved to be acute appendicitis. The remaining 9 cases (41%) had high neutrophil count of which 8 cases proved to be acute appendicitis.

Also table (7) showed that there were 78 cases had L.C. more than 10,000/cu.mm., 6 cases out of them (7.8%) had normal neutrophil count and all of them proved to be acute appendicitis. The remaining 72 cases (92.2%) had high neutrophil count of which 70 cases proved to be acute appendicitis.

Table (8) Relation between the total leucocytic count and the severity of the inflammation

Severity of inflammation	No. of cases	Total leucocytic count			
		Less than 10,000/cu.mm.		More than 10,000/cu.mm.	
		No.	%	No.	%
Acute catarrhal appendicitis	17	2	11.5%	15	88.5%
Acute suppurative appendicitis	45	4	8.9%	41	91.1%
Gagrenous appendicitis without perforation.	21	3	14.3%	18	85.7%
Perforated appendicitis:	5				
-Local peritonitis.		1	20%	-	-
-Generalised peritonitis.		3	60%	1	20%
Mass formation.	2	-	-	2	100%
Total	90	13	14.4%	77	85.6%

Table (8) showed that out of the 90 cases of acute appendicitis, there were 13 cases had total leucocytic count less than 10,000/cu.mm. and the remaining 77 cases had leucocytic count more than 10,000/cu.mm.

In the 17 cases of acute catarrhal appendicitis, only 2 cases had total leucocytic count less than 10,000/cu.mm. while the remaining 15 cases had L.C. more than 10,000/cu.mm.

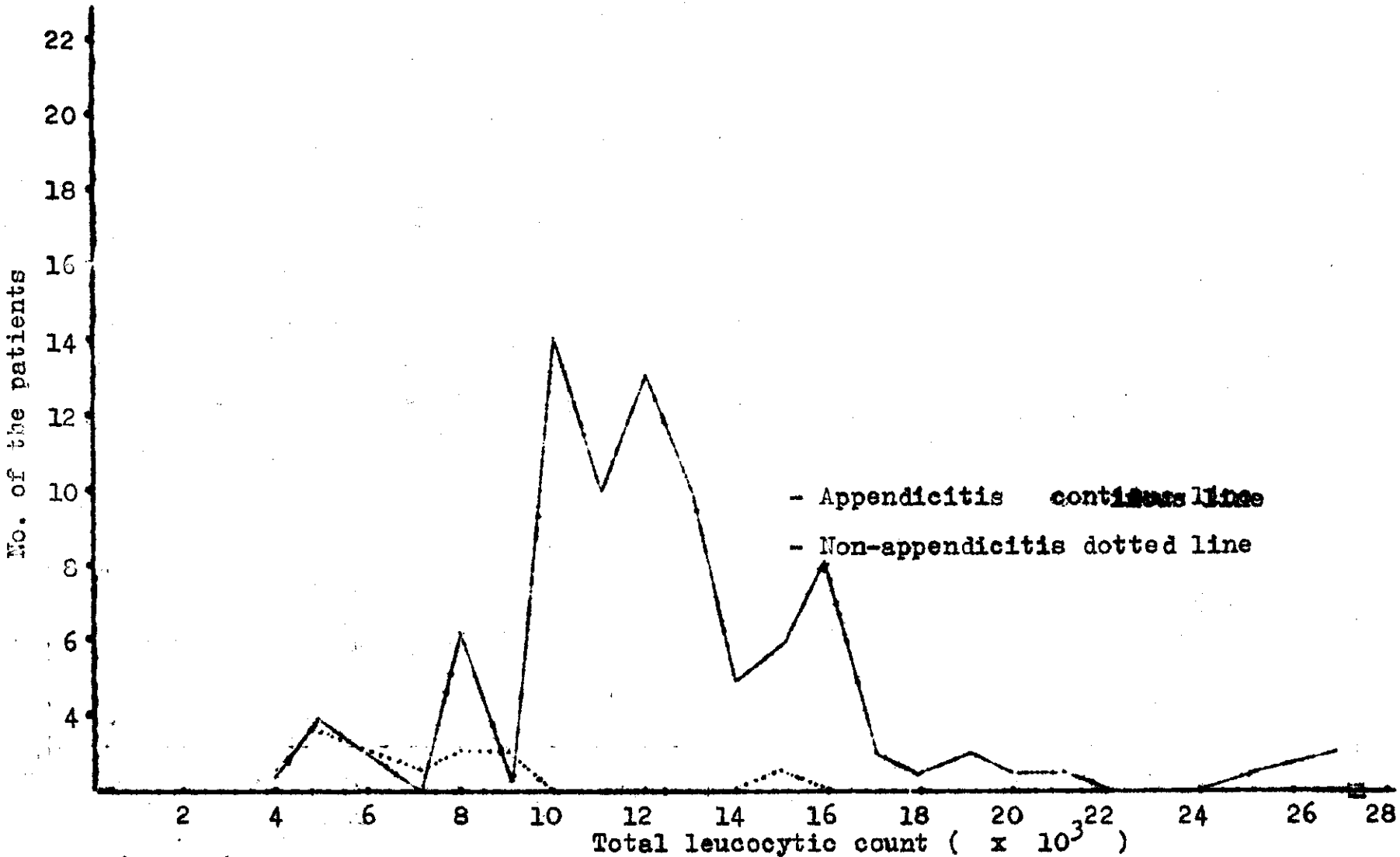
In the 45 cases of acute suppurative appenditicitis only 4 cases had total L.C. less than 10,000/cu.mm. while the remaining 41 cases had total L.C. more than 10,000/cu.mm.

Out of the 5 cases of perforated appendicitis only one case had total L.C. more than 10,000/cu.mm. while the remaining 4 had L.C. less than 10,000/cu.mm.

On the other hand the 2 cases of appendicular mass had total leucocytic count more than 10,000/cu.mm.

Table (9): Total leucocytic count in appendicitis and non-appendicitis groups.

Total leucocytic count ($\times 10^3$)	No. of Patients	
	App.	Non App.
4	1	-
5	4	3
6	2	-
7	-	1
8	6	2
9	1	2
10	14	-
11	10	-
12	13	1
13	10	-
14	5	-
15	6	1
16	8	-
17	2	-
18	1	-
19	2	-
20	1	-
21	1	-
22	-	-
23	-	-
24	-	-
25	1	-
26	-	-
27	2	-



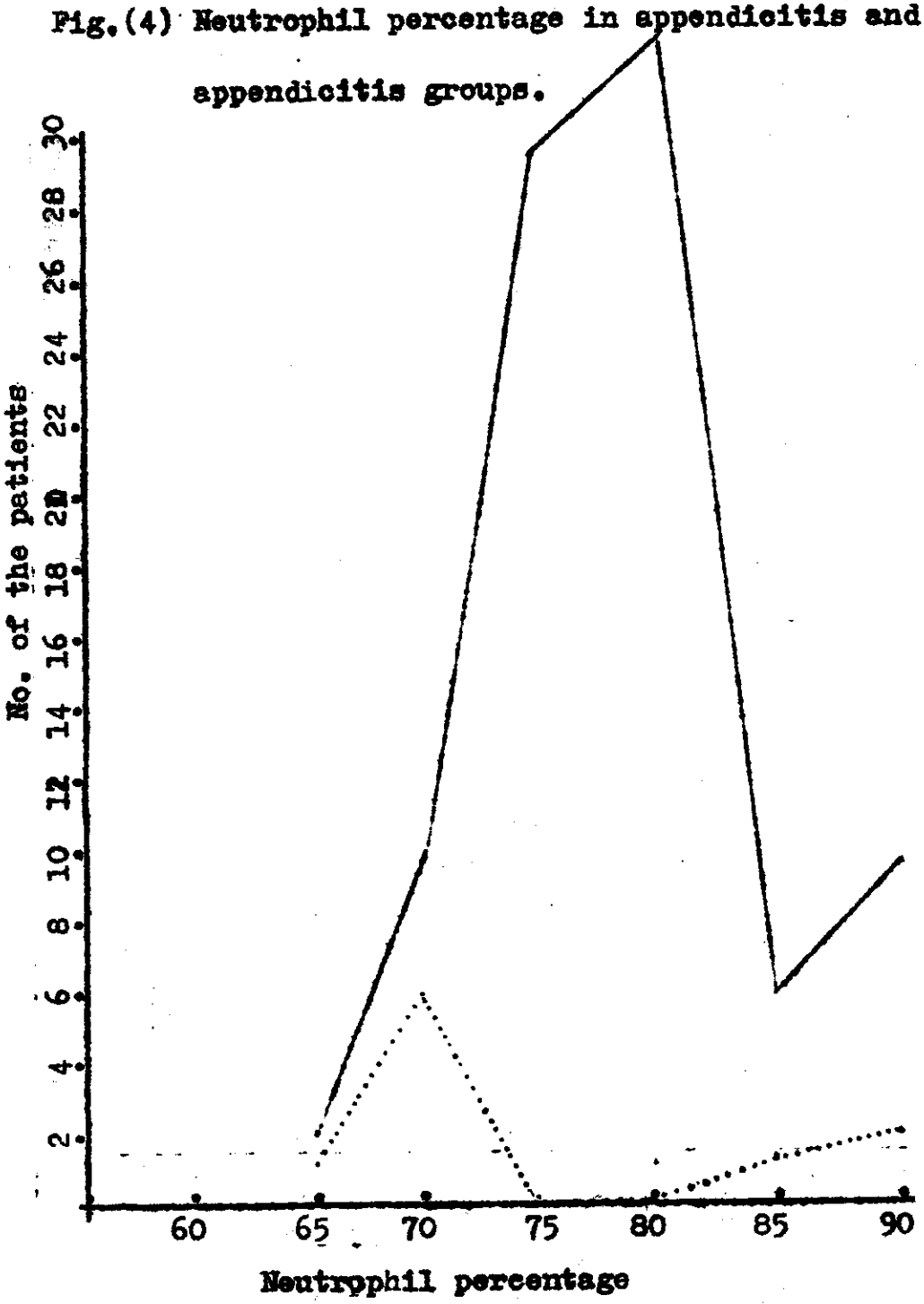
(Fig: 3) Total leucocytic count in appendicitis and non-appendicitis groups

Table (10): Total neutrophils percentage in appendicits and non-appendicitis.

Neutrophil percentage	No. of cases	
	App.	Non-App.
60%	-	-
65%	2	1
70%	10	6
75%	29	-
80%	33	-
85%	6	1
90%	10	2
Total	90	10

The upper limit of neutrophil is 75% according to Dacies and Lewis (1968).

Fig.(4) Neutrophil percentage in appendicitis and non-appendicitis groups.



- Continous line = Appendicitis group

- Dotted line = Non-appendicitis group.

Table (11): Relation between the average total leucocytic count and the age groups.

Age groups	No.of cases	Average L.C.
10-	10	12,000
15-	20	13,700
20-	36	12,900
25-	14	15,000
30-	9	12,000
35-	9	9,700
40-	1	6,700
45-50	1	12,600

The average total leucocytic count is highest in the age group 25-30 years, and least in the age group 40-45 years.

Pathology

Pathological examination showed that out of 100 cases undergone appendectomy, 10 cases proved more or less to be normal without microscopic abnormalities, the remaining 90 cases proved to have variable pathological pictures.

17 out of these 90 cases (19%) showed acute catarrhal inflammation of the appendix. Macroscopically the appendix was seen swollen, tense and congested. Microscopically: the mucosa was seen intact in most of cases with the exception of few patches of denuded mucosa. The submucosa was studed with cellular infiltration of moderate degree while the subserosa showed mild negligable cellular infiltration. On the other hand, muscular layer showed nothing and the serosa was more or less intact, no obstruction was detected. The lumen showed cellular exudate formed mainly of leucocytes (Fig 5).

45 out of the 90 cases (50%) were of the suppurative in which obstruction was detected in most of the cases (table 5).

Fig. 5: A photomicrograph of acute appendicitis showing polymorphomuclear exudate and pus cells in the lumen.

Fig. 6: A photomicrograph of acute appendicitis showing phagocytosis in a lymphoid follicle.

Macroscopically: appendices of this group were seen swollen and congested, on the surface there was suppurative exudate, the lumen was studed with purulent exudate. The serosa was congested, lost its lusterness and was dull grayish red in colour.

Microscopically: the mucosa was denuded at multiple sites, all the layers showed heavy cellular infiltration, the lumen was filled with inspissated suppurative exudate. In frank obstructive cases a plug formed of saponins, vegetable matter, blood elements and debris of mucosa was found (Fig: 9 .). Serosa was detached at multiple sites. All the layers showed marked oedema, with dilatation and congestion of the blood vessels and capillaries.

The remaining 28 cases (31%) were of the gangrenous type. Obstruction was detected in all the cases in this group (Table 5). There were black or green patches over the surface of the appendix especially on the distal end or the tip of the appendix. In the whole thickness of

Fig. 7: A photomicrograph of diffuse suppurative appendicitis, showing extensive infiltration of the musculosa by pus cells & polymorphs.

Fig. 8: A photomicrograph of acute appendicitis showing exudate in the lumen formed of inflammatory cells and clumps of bacteria.

the appendix cellular infiltration was evident. Areas of poor differentiation of the cells with marked eosinophilic staining and poor nuclear intactness were found at the gangrenous areas.

Two cases of appendicular mass were recorded in this work.

Macroscopically: the mass was formed of the appendix, caecum, distal end of the ileum and part of omentum amalgamated together, the appendix was oedematous, friable very vascular with green and black patches on its surface. Appendicectomy was performed Microscopically: the mucosa was denuded at multiple sites, all the layers showed heavy cellular infiltration, the lumen was filled with inspissated suppurative exudate. Serosa was detached at multiple sites. All the layers showed marked oedema, with dilatation and congestion of the blood vessels and capillaries.

Fig. 9: A photomicrograph of obstructive appendicitis showing faecolith obstructing the lumen, formed of vegetable matter, saponins and spirals of plant origin.

Table (12): Distribution of cases according to the pathological studies.

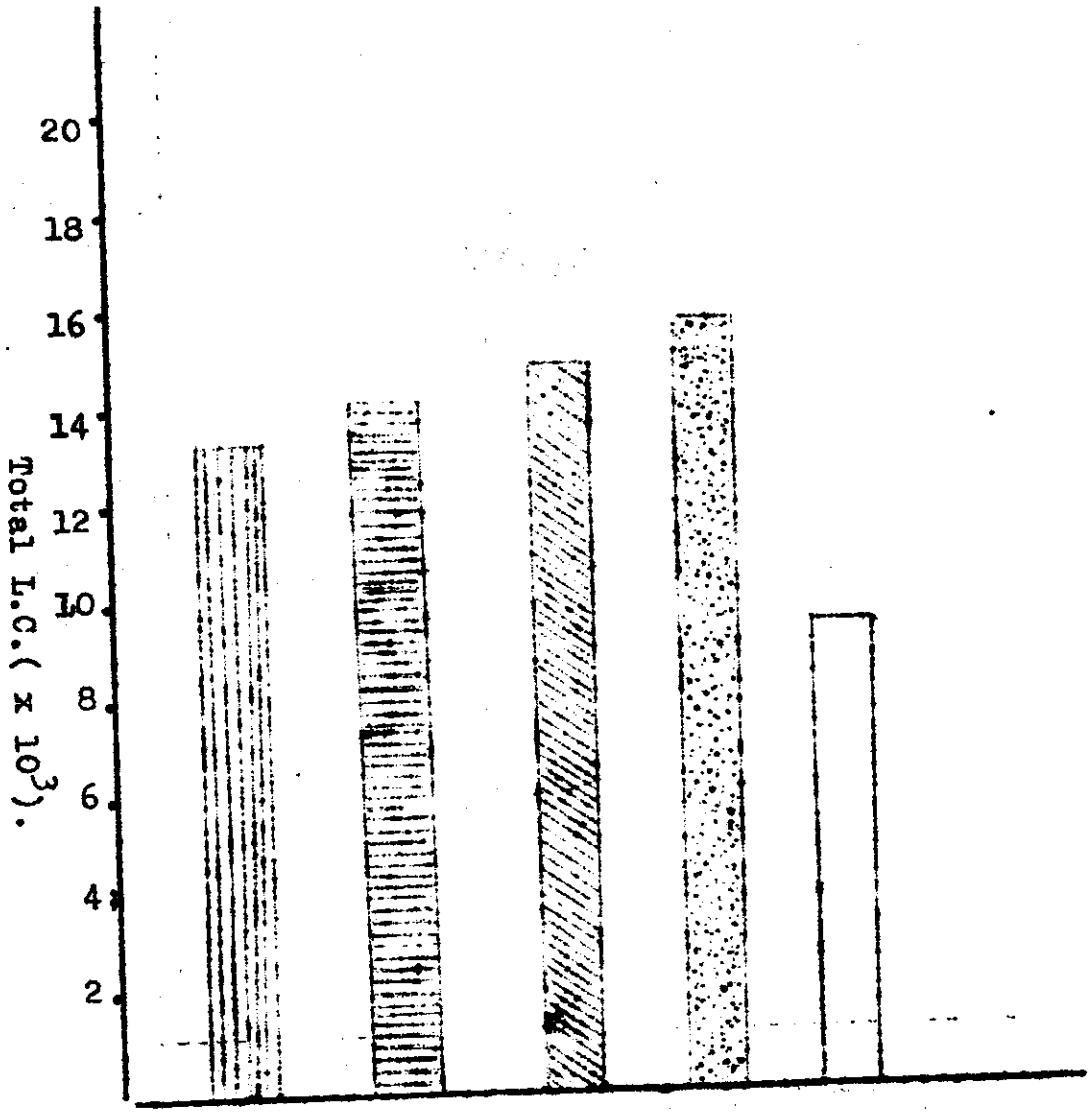
Severity of inflammation	No. of cases	Percentage
Acute catarrhal appendicitis	17	19%
Acute suppurative appendicitis	45	50%
Gangrenous appendicitis	28	31%
Total	90	100

The leucocytic count in all the above mentioned types showed variable pictures,. The average total leucocytic count was highest in cases of appendicular mass (15,500/ cu.mm.) where there were two cases, and it was least in the five cases of perforated appendicitis(9,500/cu.mm.) The mean total leucocytic count in the 17 cases of acute catarrhal appendicitis was (13,400/cu.mm.) and that of the 45 cases acte suppurative appendicitis was (14,000/ cu.mm.) , while that of the 21 gangrenous cases(14,800/ cu.mm.).

Table (13) relation between the average leucocytic count and the severity of the inflammation.

Severity of the inflammation	No.of cases	Average L.C.
Acute catarrhat appendicitis	17	13,400/cu.mm.
Acute suppurative appendicitis	45	14,000/cu.mm.
Gangrenous appendicitis	21	14,800/cu.mm.
Appendicular mass	2	15,500/cu.mm.
Perforated appendicitis	5	9,500/cu.mm.
The mean		13,440/cu.mm.

Fig: (9) Relation between the severity of inflammation and total leucocytic count



Out of the 90 cases which were proved pathologically to be avute appendicitis, four cases showing old bilharzial reaction of the appendix (4.4%) were detected.

The bilharzial reaction was evidenced by the presence of old and calcified ova which were found mainly in the submucosa but ova in all other layers were also found. Around these ova collagenous fibrous tissue was found. On top of this old bilharzial reaction the acute suppurative reaction was the predominant feature in these cases.

Table (14): Distribution of cases according to the presence of underlying specific infection.

The underlying specific lesion	No.of cases	Percentage
Bilharziasis	4	4.4%
Actinomycosis	1	1.0%

Fig: 11 : A photomicro graph of acute appendicitis in bilharzial appendix, showing extensive ova deposition in the submucosa.

Fig. 12 : A photomicrograph of acute appendicitis of bilharzial appendix showing calcified bilharzial ova in the submucosa.

Fig. 12 : A photomierograph of acute appendicitis of bilharzial appendix showing calcified bilharzial ova in the submucosa.

Fig. 13 : A photomicrograph of acute suppurative appendicitis in bilharzial appendix, showing old calcified ova and neutrophillic infiltration.

Although the mean total leucocytic count in the bilharzial cases was (9,280/cu.mm.) and that of the non-bilharzial wases (13,440/cu.mm.), the relation between the severity of the inflammation and the total leucocytic count followed the same pattern, i.e. the average total leucocytic count in cases of appendicular mass was highest and in perforated appendicitis it was least.

Table (15): The relation between the severity of the inflammation in bilharzial cases and the average leucocytic count.

Severity of the inflammation in bilharzial cases	No.of Cases	Average leucocytic count.
Acute suppurative appendicitis	2	9,700/Cu.mm.
Appendicular mass.	1	13,850/cu.mm.
Perforated appendicitis	1	4,300/cu.mm.
The mean		9,280/cu.mm.

From table (14) it was shown that only one case of ileocaecal actinomycosis, on top of which the patient developed acute appendicitis. The condition was complicated by secondary foci in the liver that studied with abscesses which ruptured into the peritoneal cavity causing generalised peritonitis, and the contained pus was yellow in colour.

The total leucocytic count was 26,100/cu.mm.

Microscopical examination:

The liver specimen showed multiple foci of suppuration separated by fibrous tissue. Each focus consists of colonies of organisms among large numbers of neutrophils. Macrophages appeared in large numbers at the periphery of the foci. The central portion of the colony stained deep haematoxylin. The appendix in this case showed fibrosis, evident phagocytic reaction (Fig:14) and multiple sacs lined by columner epithelium. Leucocytic infiltration was not marked and no colonies were found in the appendix, actually it appeared that inflammation of the appendix was not the main pathology in this case.

Fig. 14 : A photomicrograph of mild appendicitis showing histeocytic reaction.