

# ACUTE APPENDICITIS AND THE LEUCOCYTE COUNT

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## INTRODUCTION

THE total leucocyte count in the diagnosis of acute appendicitis has been the subject of frequent reviews. Various authors have published reports giving a splintered view on the value of such estimation. Lansden (1963) reported leucocytosis in 84% of cases of acute appendicitis with a relative increase in 88%. Sass *et al.* (1970) demonstrated significant leucocytosis in 90% of a series of 525 patients. Lee (1973) reported a white cell count elevation in 82% of cases. Raftery (1976) claims leucocytosis in 96%. Bolton *et al.* (1975) reported a high count in 63% of their cases but consider the laboratory data of limited supportive value. Shepherd (1968) is of the opinion that estimation of the total leucocyte count is of no diagnostic value.

Bolton *et al.* (1975) also reported a survey of the differential white cell count and neutrophil morphology and suggest that these parameters are of no greater value than the total white cell count. The present study reviews 100 cases of acute appendicitis operated by the author or his assistant.

## MATERIALS AND METHODS

This is a retrospective study of 100 consecutive cases of acute appendicitis operated at Lau King Howe Hospital, Sibul, Sarawak, Malaysia. The total white cell count was estimated in all the cases but the differential count was not done in 3 cases.

All the appendices removed were obviously diseased, hence histological confirmation of the diagnosis was not obtained. Leucocytosis was established when the total white cell count was more than 10000 per c.mm. A neutrophil count

above 75% was considered abnormal. An attempt was made to establish a relationship between the cell count and the extent of the disease. The severity of the disease was assessed at operation and graded as follows.

- Grade 1 : Acutely inflamed.
- Grade 2 : Acutely inflamed with free pus.
- Grade 3 : Gangrenous appendix.
- Grade 4 : Perforated appendix.

## RESULTS

The age range was between 3½ years and 66 years. The total white cell count range was 4000 per c.mm. to 23400 per c.mm. 52 cases (52%) had a cell count of more than 10000 per c.mm. while in 48 cases (48%) the leucocyte count was below 10000 per c.mm. The lowest count of 4000 per c.mm. was seen in a case of acute appendicitis with free pus (grade 2) and the highest count of 23400 per c.mm. was seen in gangrene of the appendix (grade 3).

Table I, shows the breakdown of the results. It is quite evident that there were almost the same number of patients with perforation (grade 4) in both categories. Similarly, there were 32 cases in the below 10000 group and 24 cases in the above 10000 with grade 1 disease.

Table I: Total white cell count, breakdown and grading

Total count	No. of cases	%	Grading	No. of cases
Below 10000/c.mm.	48	48	1	32
			2	7
			3	2
			4	7
Above 10000/c.mm.	52	52	1	24
			2	14
			3	5
			4	9

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In Table II, the neutrophil count was raised in 25 out of 48 cases (52%) in the below 10000 group and low in 21 cases (44%). In 2 cases the count was not done. In the high count group, the neutrophil count was raised in 49 cases (94%) and low in 2 cases (4%) and not done in 1 case.

**Table II: Neutrophil count in both groups.**

Neutrophil count	Total white cell count			
	Below 10000/c.mm.		Above 10000/c.mm.	
	No. of cases	%	No. of cases	%
Above 75%	25	52	49	94
Below 75%	21	44	2	4
Not done	2	4	1	2

## DISCUSSION

The range of normal leucocyte count in healthy individuals vary widely, but anything between 5000 and 10000 per c.mm. (Hardison 1968) is accepted as normal. A raised leucocyte count was seen in only 52% of the present series while in the remaining 48% the count was below 10000 per c.mm. These results are in striking contrast to the series presented by other authors (Table III).

**Table III: Leucocytosis reported by various authors.**

Author	Year	Result
Bolton <i>et al.</i>	1975	63%
Lansden	1963	84%
Lee	1973	82%
Raftery	1976	96%
Sasso <i>et al.</i>	1970	90%
Present series	1979	52%

The neutrophil count as seen from the present review was raised in 94% of the cases in the above 10000 per c.mm group. Though the neutrophil count was raised in only 52% of cases in the below 10000 group (not done in 4%), the result does not carry any significance in influencing the line of management. This again does not bear out the report by Raftery (1976) who showed a high neutrophil count in 6 cases with below 10000 total count and 5 of these had acute appendicitis, demonstrating the value of differential count in the diagnosis.

Very often acute appendicitis presents with a wide and varied picture and though the total and differential count is invariably done before surgery, reliance on the laboratory information should not dominate the clinical assessment. As is seen from the present survey even perforated appendix had a low total and differential count.

The findings from this review indicate that a routine total and differential count is of no specific diagnostic value. The management of a clinically typical case of acute appendicitis should not be influenced by a low total or differential count.

It is suggested that undue significance should not be placed on these laboratory parameters, as they are of limited supportive value. When the haematological information does not tally with the physical findings, the clinical assessment should be given precedence.

## SUMMARY

The total and differential leucocyte counts were estimated in 100 consecutive cases operated for acute appendicitis. Leucocytosis was seen in 52% of cases. 48% of patients had a leucocyte count below 10000 per c.mm. A study of the differential count was also made to see if this parameter could be used as a specific diagnostic aid. Though the neutrophil count was high in 74% of the cases, the comparative count among the below 10000 per c.mm. group was not significant. It is concluded that the total and differential counts are of limited value in the assessment of these patients. It is suggested that such estimation be used as a supportive aid only.

In those doubtful cases with normal or low counts, frequent clinical reviews should be done

and reliance placed on clinical assessment rather than laboratory information.

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