THE HAEMOGRAM IN THE DIAGNOSIS OF ACUTE TYPHOID FEVER — WITH SPECIAL REFERENCE TO THROMBOCYTOPENIA

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SYNOPSIS

The haemograms of 31 patients with confirmed typhoid fever were analysed. Four patients (13%) had a haemoglobin of less than 11 gm/100 ml, 5 (16%) had a white cell count below 4,000/mm^3 and 10 (32%) had a platelet count below 100,000/mm^3. Thrombocytopenia is a common feature in typhoid fever and the association of fever with leucopenia and thrombocytopenia should alert one to the diagnosis of typhoid fever in an endemic region.

INTRODUCTION

While leucopenia with a relative lymphocytosis is a well-recognised feature of the early phase of typhoid fever, thrombocytopenia is not. Thrombocytopenia in association with typhoid fever is not mentioned in standard texts in medicine (1, 2, 3) although several studies (4, 5) have quoted an incidence of roughly 25 per cent. In the course of a drug trial on typhoid fever, haematological data was collected and the results are presented here.

PATIENTS AND METHODS

The patients in this study all had bacteriological confirmation of typhoid fever. Only patients who had a complete haemogram done on admission or soon after admission, before any form of drug therapy had been started, were included. The majority of patients had not been on any drugs prior to admission but a few had been treated by general practitioners outside. It was not possible to ascertain what drugs they had been on.

There were 31 patients in all, of which 21 were males and 10 were females. Thirteen were Malays, 9 Chinese, 8 Indians and 1 Caucasian. Their ages ranged from 13 years to 59 years with a mean of 23.7 years.

RESULTS

The results of the haemoglobin estimation, white cell counts and platelet counts are tabulated in Table 1. Only 4 patients (13%) had a haemoglobin of less than 11 gm/100 ml and 2 of them were pregnant. Leucopenia was also not striking. Only 5 patients (16%) had a white cell count of less than 4,000/mm^3. The lowest recorded count was 2,200/mm^3 and the highest was 17,300/mm^3. Ten patients (32%) had a platelet count below 100,000/mm^3. The lowest count was 49,000/mm^3. No petechiae or overt bleeding was detected in any of the patients.

Thrombocytopenia appeared to be related to the duration of fever which ranged from three to thirty days. Six patients had fever for less than a week and six had fever for 3 weeks or longer. Their haemograms are tabulated in Tables 2 and 3. The mean platelet counts for those with short and long durations of fever were 112,000/mm^3 and 164,000/mm^3 respectively. Although the mean platelet count was lower during the first week of fever, this was not statistically significant.

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Table 1
Results of haemoglobin estimation, white cell counts and platelet counts.

Haemoglobin (gm/100 ml)	No. of patients	White cell count (1000/mm³)	No. of patients	Platelets (1000/mm³)	No. of patients
10–	4	2–	2	0–	1
11–	9	3–	3	50–	9
12–	6	4–	4	100–	9
13–	4	5–	6	150–	4
14–	6	6–	6	200–	8
15–	2	7 and above	10		
	31		31		31

Table 2
Haemograms of patients with less than one week of fever

Patient	Haemoglobin (gm/100 ml)	White cell count (1000/mm³)	Platelets (1000/mm³)
1	13.2	6.4	110
2	13.6	3.7	64
3	11.4	6.1	83
4	10.4	5.4	100
5	15.1	5.8	176
6	12.5	4.4	138

Mean platelet count: 112,000/mm³
Mean white cell count: 5,300/mm³

Table 3.
Haemograms of patients with three or more weeks of fever

Patient	Haemoglobin (gm/100 ml)	White cell count (1000/mm³)	Platelets (1000/mm³)
1	14.0	10.4	200
2	14.2	9.9	221
3	11.6	7.1	59
4	11.1	4.8	278
5	14.2	8.5	170
6	11.2	6.3	54

Mean platelet count: 164,000/mm³
Mean White Cell count: 7,800/mm³

DISCUSSION

The results show that a moderate thrombocytopenia occurred in about a third of the patients but we were unable to confirm that this was more marked during the first week of the illness. From this and other studies (4, 5) thrombocytopenia appears to be a rather common event in typhoid fever although the incidence of 51.6% quoted by Piankijagum *et al.* (6) does seem to be higher than expected. However, despite this high incidence, they recorded only one case of purpura.

The etiology of the thrombocytopenia is uncertain. It may be due to bone marrow depression especially during the initial septicemic phase of the infection. But in view of reports that the organism may actually localise in the marrow at a later phase of the illness — and yet be associated with recovery of the platelet and white cell counts — this is certainly not the only explanation. Butler *et al.* (7) have suggested that disseminated intravascular coagulation may account for the thrombocytopenia but cautioned that the evidence was not conclusive. Some of the patients in Piankijagum's study (6) had bone marrow studies performed on them. This was generally unhelpful but in some cases there was a marked increase in the number and activity of the phagocytic cells ingesting white cells, red cells and platelets. It appears that further studies are required to elucidate the cause of the thrombocytopenia in typhoid fever.

From the practical view point, however, the common assocation of leucopenia and thrombocytopenia with typhoid fever is important. We feel that thrombocytopenia as a feature of typhoid fever has not been stressed sufficiently. Traditionally, medical students are taught that fever in association with leucopenia and thrombocytopenia would suggest a viral etiology. But in tropical countries where typhoid fever is endemic, this is not necessarily true; such patients should not be dismissed out of hand and the more sinister illness should be excluded.

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