

# TYPHOID FEVER IN AN ENDEMIC AREA: A 'GREAT IMITATOR'\*

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## SUMMARY

*A series of 159 cases of typhoid fever from an endemic area is presented. Epidemiological and clinical features on admission are considered. Although the findings in the majority of cases tally with standard descriptions of the disease, typhoid fever was included in the differential diagnosis of only about half of the cases. Typhoid fever should always be borne in mind when a patient from an endemic area presents with a pyrexial illness.*

Typhoid fever is endemic in the area served by Edendale Hospital. It is common experience that this disease is not correctly diagnosed on admission to the wards of this hospital. The following survey has been made in order to provide a clinical and laboratory profile of typhoid fever as seen in this area and to emphasize that typhoid fever should be considered in the differential diagnosis of many cases, especially when the patient comes from a 'typhoid area'.<sup>1</sup>

## MATERIAL

All case records classified as 040 (International Classification number for typhoid fever) for the year 1969 were sought. There were 170 of these, but 11 could not be found, so 159 were scrutinized. Details of incidence and admission diagnosis were extracted from all of these. Paediatric cases (arbitrarily defined in this hospital as under 10 years of age) were excluded from the study of clinical and laboratory features on the grounds that these features in younger patients tend to differ from those seen in adults.<sup>2</sup> There

were 30 paediatric cases.

It was originally intended to define observed features on the basis of the well-recognized features of the disease. Unfortunately, it proved impossible to extract any information about the duration of the illness from most of the available records. Apart from the language barrier existing between most doctors and patients here, many patients are themselves uncertain for how long they have been ill.

Not all the adult cases were originally regarded as medical: 6 presented with what appeared to be surgical conditions and 3 with predominantly gynaecological complaints.

## RESULTS

### *Incidence*

Seasonal incidence is illustrated in Fig. 1. It can be seen that the disease occurs throughout the year, but is most prevalent during the height of summer and least so in the early spring.

Edendale Hospital admits Bantu and Indian patients, the ratio of Bantu to Indians in the general hospital population being about 10:1. Among the typhoid cases reviewed here, there was a single case in an Indian and all the remainder were Bantu. The reasons for this discrepancy probably include the relatively low socio-economic status of the Bantu and the fact that many of them live in rural areas with contaminated rivers as their sole source of water.

Cases were almost equally distributed between males (76 patients) and females (83 patients). Age incidence is illustrated in Fig. 2. Typhoid fever is predominantly a disease of adolescence and young adulthood: 58.5% of

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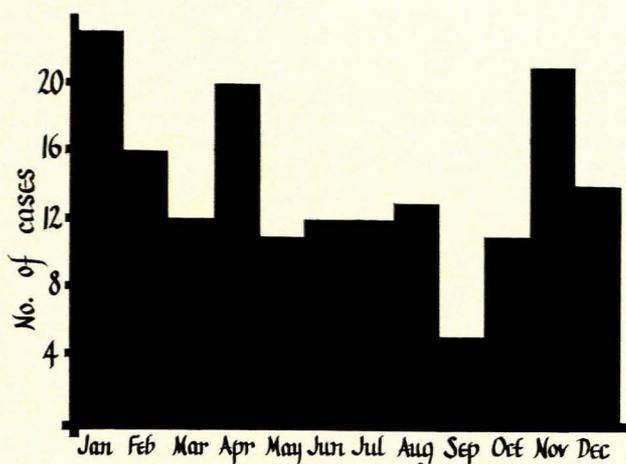


Fig. 1. See text.

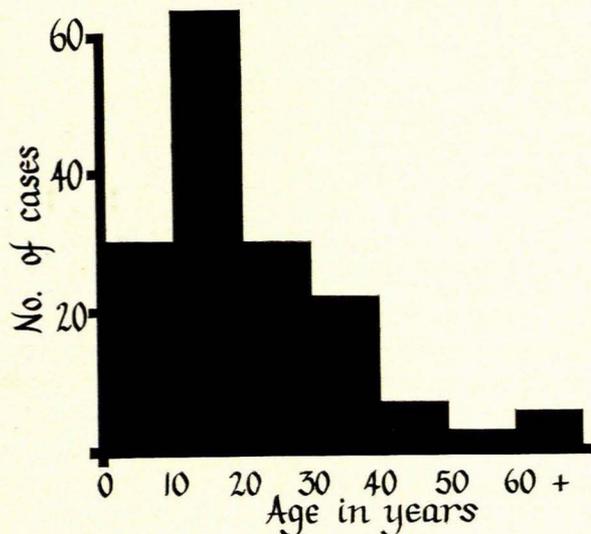


Fig. 2. See text.

all cases were in patients aged between 10 and 29 years.

Certain localities within the region served by Edendale Hospital stand out as 'typhoid areas'. The Camperdown magisterial district provided 69 cases and 28 came from the Edendale area. The remaining cases came from a number of other localities in the southern Natal interior.

#### Admission Diagnoses

Many cases were admitted with more than one provisional diagnosis.

Only 9 cases were labelled confidently as typhoid fever. A further 75 were regarded as '? typhoid'. This means that typhoid fever was considered in the initial differential diagnosis of only 53% of cases.

Forty-five cases were admitted with the diagnosis of pyrexia of undetermined origin. This label was often coupled with '? typhoid fever'. Most of the remaining provisional diagnoses centred on a particular body system. They are summarized in Table I.

Finally, there is a small miscellaneous group of diagnoses: anaemia, epistaxis, cardiomegaly and persistent

TABLE I. PROVISIONAL DIAGNOSES RELATING TO A SINGLE BODY SYSTEM IN CASES SUBSEQUENTLY PROVED TO BE TYPHOID FEVER

System	Diagnoses	No. of cases
Respiratory	Pneumonia	25
	Bronchitis	3
	Asthma	1
Gastro-intestinal	Gastro-enteritis	12
	Dysentery	1
	Amoebic liver abscess	4
	Melaena	2
	Malabsorption	1
	Intestinal obstruction	1
	Acute appendicitis	1
Genito-urinary	Hepatomegaly	1
	Urinary tract infection	9
	Pelvic infection	5
	Acute nephritis	2
	Incomplete abortion	1
Central nervous	Bilharzia	1
	Meningitis	4
	Encephalitis	1
	Paraparesis	1

hiccoughs. One case of each of these was recorded.

#### Presenting Symptoms

Presenting symptoms reflected involvement of nearly all the body systems. Most patients volunteered that they felt generally ill (69.8% of cases). Many had generalized body pains and aching of the joints and limbs. Headache was a prominent symptom, occurring in 66.7% of cases.

Many patients had chest symptoms. These occurred in 63.6% of cases and included cough, chest pain, production of mucoid sputum and haemoptysis.

Abdominal pain was reported in 51.9% of cases. In many instances it was generalized, but in several it was localized to the right upper quadrant or periumbilical or suprapubic regions.

Diarrhoea was a complaint in only slightly more than half of the cases (50.4%). Nearly one-third of patients with diarrhoea said they had seen blood in their stools (16.3% of all cases). Gastro-intestinal symptoms other than diarrhoea were recorded in 47.4% of cases. Most of these patients complained of profound anorexia. Nausea, vomiting and constipation occurred in relatively few instances.

Genito-urinary symptoms occurred in 29.5% of cases. Complaints were usually those of burning and frequency of micturition. Gynaecological symptoms such as vaginal discharge and menstrual abnormalities were occasionally recorded.

Bleeding from various sources was a complaint in 26.4% of cases (including those with blood in the stools). Haematuria, epistaxis, haemoptysis and vaginal haemorrhage were all recorded.

#### Signs

Pyrexia was marked in most cases, as can be seen in Fig. 3. Nearly three-quarters of all cases (73.2%) had temperatures of more than 38.5°C (101.3°F). Only 6 patients had normal or subnormal temperatures. All but one of these had a serious complication (perforation, haemorrhage or septicæmic shock).

The pulse rate in typhoid fever is said to be relatively slow.<sup>2</sup> This was observed in several cases, but a substantial number of patients had rapid pulses (32.6% of cases had pulse rates of 120/min or more).

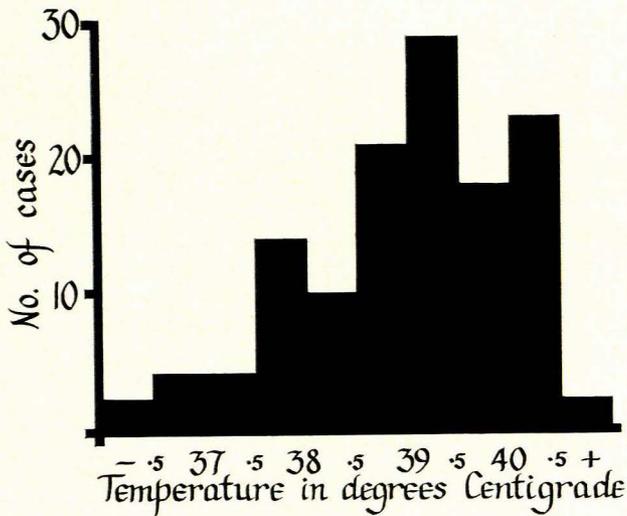


Fig. 3. See text.

The classical typhoid abdomen<sup>2</sup> is distended and tender with a palpable, soft spleen. In the present series, distension was recorded in 22.5% of cases, tenderness in 53.5% and splenomegaly in 5.4%. The last figure is low, probably as a result of the well-recognized difficulty in palpating the typhoid spleen. Splenomegaly was often detected subsequently during the patient's stay in the ward.

Other prominent signs included obvious toxicity and mental clouding. Abnormal chest signs were frequently elicited and were a common source of diagnostic error. X-ray changes were usually absent in these cases. Several patients had signs of meningeal irritation. In all such cases, the cerebrospinal fluid was normal.

#### Laboratory Findings

The white cell count showed leucopenia in 37.1% of cases (white cell count of less than 5 000/mm<sup>3</sup>). Seven per cent of cases had a leucocytosis of more than 10 000/mm<sup>3</sup>. The majority of cases (55.9%) thus had white cell counts within the normal range, but it must be emphasized that nearly all these patients were ill and pyrexial. A low or normal white cell count was often of value in indicating probable typhoid fever in a case of pyrexia of undetermined origin.

The diagnosis was established by positive blood clot culture in 55.0% of cases and by positive stool culture in 19.4% of cases. The remainder were diagnosed on the basis of a rising Widal titre or on morbid anatomical features seen at laparotomy or autopsy. A single patient had *Salmonella typhi* cultured from her urine. Urine cultures were not performed as a routine but only in those cases where urinary tract infection was suspected.

#### Mortality

Sixteen patients died—a mortality of 10%. Of these, 8 deaths were the result of perforation and the remainder followed catastrophic haemorrhage or severe toxæmia.

#### DISCUSSION

From the foregoing, a picture of typhoid fever as it occurs in this hospital can be constructed. The patient is a young

Bantu adult or adolescent, either male or female, and usually comes from a known typhoid area. The disease occurs throughout the year, but with a moderate increase in incidence during the hot months.

The clinical features in these cases were not strikingly different from standard descriptions of typhoid fever.<sup>2,3</sup> All the classical symptoms and most of the usual signs were recorded in the majority of instances. The infrequency of splenomegaly has already been mentioned and the reason for this is postulated to be observer error. Another sign that must be mentioned because of its apparent absence is the rose spot rash. There was no record of its having been seen in any case. It is uncertain whether rose spots do not occur in the Bantu or occur and are difficult to detect on pigmented skins. I have made an effort to find them on all the cases of typhoid fever that I have seen recently, but without success.

It is regretted that clinical features could not be correlated with the duration of illness, since this would have produced a much clearer picture of the different features of typhoid fever as seen in our patients. Nevertheless, it must be emphasized that once the diagnosis had been established in a particular case, the clinical features were usually seen to be typical of the disease in one of its stages.

Why, then, were so many other diagnoses entertained when the patients were first seen? The reasons are probably an insufficiently high index of suspicion on the part of the admitting doctor and a reluctance to make a confident diagnosis of typhoid fever in the face of abnormal chest signs or other signs of system disease. It is likely that the prominence of symptoms and signs in a particular system distracted attention from the generalized nature of the patient's illness. No patient in this series had clinical features that could be attributed exclusively to a single-system disease.

The recognition that a patient comes from a known 'typhoid area' is an important diagnostic clue. It is certainly so in this hospital, but would be even more valuable in the case of a patient who presents in an area in which typhoid fever does not normally occur (e.g. the Englishman who has returned to Britain from a holiday in Southern Europe).<sup>4</sup>

In conclusion, it must be reiterated that typhoid fever affects many systems in the body and can thus produce clinical features which may be confused with those of several other diseases. In endemic areas it is important to include typhoid fever in the differential diagnosis of these diseases, particularly if more than one system of the body is found to be involved. Typhoid fever remains a lethal disease in a substantial number of cases and its early diagnosis and treatment are thus of importance.

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