

TUBERCULOUS ENTEROCOLITIS

A STUDY OF 19 CASES SEEN AT EDENDALE HOSPITAL, PIETERMARITZBURG, NATAL, 1959-1964

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The Edendale Hospital serves the central area of Natal, whose largely rural Zulu population contributes 89% of admissions to hospital. The minority of the patients are Indians who are economically and socially more developed. Although the number of cases of tuberculous enterocolitis (TBE) is small, this group presents a difficult diagnostic problem owing to the following factors:

1. The difficulty experienced in applying rigid diagnostic criteria in a non-teaching hospital with a large turnover. Such criteria, advocated by Bockus,¹ are positive animal culture, histological evidence of tubercle bacilli or tubercles with caseation, or operative findings with positive biopsy.

2. Malnutrition, all forms of deficiency disease, and amebic and bacillary dysentery may all produce a similar clinical picture.

3. The poor clinical histories obtained from illiterate patients and the difficulty experienced in long-term follow-up and therapy in these circumstances.

4. The insidious onset and chronic course of the disease.

PATHOGENESIS

Boyd² describes the pathogenesis of TBE in the following stages:

1. A massive dose of bacilli is swallowed.
2. The organisms pass to the tubular glands of the mucosa, where inflammation results in an exudate in the depths of the gland.
3. The bacilli are carried through the epithelial lining by phagocytic cells and reach the submucosa, where they produce the usual tuberculous lesions.
4. The overlying mucosa may be cast off with the formation of ulcers, or may remain intact.
5. The bacilli are carried to the mesenteric lymph nodes, which drain the infected segment of bowel, and there produce caseous lesions.

The inflammation and destruction of the mucosa and obstruction of the lymph vessels result in malabsorption.

The clinical picture is largely dependent on the steatorrhoea (owing to the decreased absorption of fat) and anorexia and diarrhoea, which cause emaciation.

The disease is usually secondary to pulmonary tuberculosis, resulting from the swallowing of infected sputum. Primary TBE may follow the ingestion of infected milk.¹ Some cases of apparently primary TBE may be regional enteritis and non-caseous tuberculated enterocolitis.²

PATHOLOGY

In a collective review of ileocaecal tuberculosis by Hoon *et al.*,³ material was taken from the records of the Mayo Clinic from 1921 to 1946. All their cases were histologically proven, often following laparotomy with biopsy and sometimes following bowel resection. In 35 cases in which specimens of bowel were available, 5 showed involvement of the ileum only, 11 of the caecum only, and 19 were mixed. In 34 of these cases tuberculous mesenteric glands were found. Morphologically the disease was divided into ulcerative (22 cases), hypertrophic (3 cases) and mixed (10 cases). The ulcers were small with ragged undermined edges, the majority being irregular and many lying longitudinally. The classical appearance of encircling transverse ulcers was seen in only 4 cases.

SELECTION OF CASES FOR STUDY

The case records of patients admitted to Edendale Hospital between 1959 and June 1964, in whom a final diagnosis of tuberculous enterocolitis, abdominal tuberculosis and malabsorption syndrome had been made, were examined. Cases of malnutrition, pulmonary tuberculosis and tuberculous peritonitis were excluded, although TBE may have been present on account of the large number of such cases (Table I).

Cases were included in this series if they fulfilled the majority of the following criteria:

1. A definite history of symptoms related to the alimentary tract, usually diarrhoea and abdominal pain.
2. Signs of malnutrition, wasting and vitamin deficiency.
3. Biochemical or radiological evidence of malabsorption.
4. Good response to tuberculostatic treatment judged by subjective and objective improvement and weight gain.

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5. Evidence of extra-abdominal tuberculosis, either active or quiescent. When no such evidence was available, cases were classified as presumptive primary tuberculous enterocolitis.

6. Post-mortem demonstration of tuberculous ulcers of the bowel.

The incidence of pulmonary tuberculosis was 1 in 33 admissions, while TBE occurred once in 4,360 admissions.

The 19 cases (shown in Table I) in the series were all Africans, the youngest patient being 7 years old and the oldest 66, with an approximately equal sex distribution (Table II).

TABLE I. NUMBER OF ADMISSIONS, CASES OF TBE AND PTB

Year	1959	1960	1961	1962	1963 (to June)	1964	Total
Total admissions	13,450	15,870	17,135	17,720	19,735	9,000	92,910
Pulmonary tuberculosis	327	427	595	564	556	270	2,739
TB enterocolitis	4	5	2	2	2	4	19

TABLE II. AGE AND SEX DISTRIBUTION

	1-10	11-20	21-30	31-40	41-50	51-60	61-70	Total
Male	—	2	3	1	1	3	—	10
Female	1	1	5	—	—	1	1	9
								19

Symptoms

Bockus³ states: 'A pathognomonic syndrome or symptom does not occur in ileocaecal tuberculosis'. Despite the poor histories obtained, certain features were, however, striking in this series. The symptoms were largely gastrointestinal, while the predominant signs were those of poor general condition (Table III).

TABLE III. SYMPTOMATOLOGY

Gastro-intestinal symptoms	No.	% of patients
Diarrhoea	16	84
Abdominal pain	9	47
Vomiting	5	26
Anorexia	2	10
Constipation	1	5
Nausea	1	5
General symptoms		
Cough	10	53
Loss of weight	9	47
Oedema	6	32
Amenorrhoea	5	26
Malaise	4	21
Skin changes	3	16
Dyspnoea	2	10
Mental dullness	1	5

Sixteen of the patients gave a history of diarrhoea, usually intermittent, the duration varying from one week to many years. This was often accompanied by abdominal pain. The stools were described variously as watery, yellow, loose, often with blood and mucus. Abdominal pain was described as cramp-like, cutting and burning. The pain was usually generalized, but sometimes confined to one particular area. Five patients complained of vomit-

ing. Other complaints were anorexia and nausea and constipation, which alternated with diarrhoea.

Cough described as chronic, with or without sputum, was the most common general complaint. Weight loss and oedema, usually of the feet but sometimes generalized, were frequent symptoms. Of the 6 women of childbearing age, 5 complained of amenorrhoea, which varied in duration from 5 months to one year. The sixth woman had delivered one month previously.

Physical Signs

The most striking feature in all the patients was their very poor physical condition. The clinical picture in many of these patients was that of 'adult kwashiorkor': a severely wasted person with minimal muscle bulk, atrophic hair and nails, thin lustreless depigmented skin with signs of pellagra and scurvy. Peripheral or generalized oedema was present in 47% of patients.

Abnormal chest signs ranging from scattered ronchi to consolidation were noted in 8 patients (42%). This compares with 60% in cases of tuberculous peritonitis in the series of Burack and Hollister,⁴ and 28% in the series of Hoon *et al.*⁵ Generalized abdominal tenderness was noted in 6 cases, free fluid in 6, and hepatomegaly in 4. Two patients had palpable abdominal masses, one in the right iliac fossa, the other in the right upper quadrant.

The presence of fever, recorded in 63% of patients, and its investigation as a pyrexia of unknown origin, in some cases prevented the erroneous diagnosis of simple malnutrition. The adults whose weight was recorded on admission had an average weight of 89 lb.

Investigations

Urine examination—albuminuria was recorded in 8 cases.

Haematology—a haemoglobin level of less than 10 G/100 ml. was present in 6 patients (32%).

Plasma proteins were low in all patients and all had reversed albumin-globulin ratios. The extremely low plasma protein levels accounted for the frequency of clinical oedema (47%).

TABLE IV. PLASMA PROTEIN LEVELS OF 16 PATIENTS

G/100 ml.	Albumin	Globulin
Less than 1	4	—
1.1-1.5	6	—
1.6-2.0	5	1
2.1-2.5	1	3
2.6-3.0	—	2
3.1-3.5	—	3
3.6-4.0	—	2
More than 4	—	5
Average	1.5	3.5

Glucose-tolerance tests showed flat curves in the 4 cases in which this investigation was done.

Stool examination was performed in 10 cases, the usual macroscopic description being brown and semi-formed, with mucus, blood and pus in one patient. Intestinal parasites were seen in 7 cases, there being multiple species present in some patients. *Giardia lamblia* and *Ascaris lumbricoides* ova were each found on 3 occasions. *Balantidium coli*, *Strongyloides stercoralis*, *Entamoeba histolytica* and *Trichuris trichiura* ova were each recorded once.

Sputum examination for acid-fast bacilli was positive in one patient and negative in 6.

Gland biopsy was done in 3 patients, all showing active caseous tuberculous lymphadenitis.

The vitamin-A absorption test showed evidence of malabsorption in 4 patients and was normal in 2.

Radiology

Chest X-ray was done as a routine on all patients and barium meals in 11 cases. The X-rays of all patients have been rescrutinized by the radiologists and divided into simple groups (Table V). Pleural thickening, fibrosis, small effusions and hilar adenopathy were classified as minimal tuberculosis.

TABLE V. RADIOLOGICAL REPORTS

Chest X-ray	No. of patients
Normal	6
Obvious tuberculosis	5
Minimal tuberculosis	5
Hilar adenopathy only	3
	—
	19
<i>Barium meal</i>	
Normal	3
Malabsorption pattern	6
Duodenal stricture	1
Jejunitis	1
	—
	11

Five patients with a normal chest X-ray and no extra-abdominal tuberculosis were classified as presumptive primary tuberculous enterocolitis, an incidence in this series of 26.3%, which compares with 16% in the series of Hoon *et al.*³ Barium meal helped diagnostically in 8 of the 11 cases in which these studies were done. The duodenal stricture and the jejunitis could possibly have been of tuberculous origin.

TREATMENT

On admission the patients were treated for their presenting complaint, usually diarrhoea, with sulphonamides, kaolin mixtures and occasionally neomycin (Ivax). Vitamin deficiencies were treated and patients were given normal hospital diet.

An empirical trial of tuberculostatic treatment with streptomycin para-amino-salicylic acid (PAS) and isoniazid (INH) was begun when sufficient evidence and suspicion had accumulated to suggest the tuberculous nature of the disease. There was sometimes a considerable interval between admission and appropriate therapy.

RESULTS

Response to symptomatic treatment was usually disappointing or temporary. However, on tuberculostatic treatment marked improvement was soon noted in many cases, with relief of symptoms and objective improvement. Table VI shows that some patients, whose weight was recorded many times, continued to lose weight in hospital in spite of full diet and symptomatic treatment, until tuberculostatic therapy was commenced.

TABLE VI. WEIGHTS OF 5 PATIENTS (IN LB.)

Patient no.	On admission	Start of TB therapy	On discharge
1	99	87	110
2	95	83	96
13	140	133	147
14	115	99	108
19	82	73	100

Illustrative Case Histories

Case 1. J.M., a Zulu female aged 30 years, was admitted complaining of diarrhoea and vomiting of one week's duration. There were 4-5 watery yellow stools per day. She also complained of a 'cutting' abdominal pain, malaise, and loss of

weight. She had been delivered of an infant 1 month previously.

On examination she was pale, wasted, and hardly able to walk. She had a tachycardia, a slight fever and weighed 99 lb. No abnormality was found in the chest or cardiovascular system. There was generalized abdominal tenderness, with a palpable mass in the right iliac fossa. The haemoglobin concentration was 7.2 G/100 ml. Chest radiography and barium meal showed no abnormality. She was treated with a sulpho-namide and kaolin mixture, but continued to run an intermittent fever with no relief from diarrhoea or abdominal pain. The weight fell to 87 lb. and the decrease in haemoglobin level to 5.3 G/100 ml. required transfusion. After 6 weeks empirical treatment for tuberculosis was started and improvement was noticed almost immediately. The diarrhoea ceased and the mass in the RIF became less tender and disappeared slowly. She was discharged on outpatient treatment after a further 4 weeks, weighing 110 lb., with a diagnosis of presumptive primary tuberculous enterocolitis.

Case 19. P.U., a Zulu female aged 25 years, was admitted complaining of abdominal pain, diarrhoea, nausea and vomiting for 6 months. She had had amenorrhoea since the birth of her child a year previously and had noted some oedema of the feet. On admission she was emaciated and anaemic, she had a high swinging temperature and weighed 82 lb. There was slight generalized abdominal tenderness and there were no abnormal chest signs. The haemoglobin level was 8.8 G/100 ml., the serum albumin 1.9 G/100 ml. and the globulin 3.1 G/100 ml. The glucose-tolerance curve showed a decreased uptake: a maximum blood-sugar level of 103 mg/100 ml. was reached after 2 hours. The stool was blood-tinged, watery, with mucus and pus. A gland biopsy from the right supra-clavicular fossa showed active caseous tuberculous lymphadenitis.

Chest X-ray showed calcified hilar glands and barium meal showed a malabsorption pattern in the small bowel. Her condition continued to deteriorate while she was being investigated, her weight falling to 73 lb., and the patient became so weak that intravenous feeding was required. Tuberculostatic treatment was begun on receipt of the gland biopsy result. Improvement was initially slow, but the appetite improved, and she was discharged after 4 weeks of streptomycin, PAS and INH therapy, weighing 100 lb., with a diagnosis of secondary tuberculous enterocolitis.

Two patients in the series died while in hospital:

Case 6. African female aged 60 years, admitted with a history of cough, weight loss and dyspnoea. On admission there were signs of extensive pulmonary tuberculosis, wasting and dehydration. Intravenous feeding and tuberculostatic drugs were commenced immediately, but the patient went into acute renal failure associated with the profound tuberculous toxæmia and died 6 days after admission. Postmortem examination showed pulmonary tuberculosis, an acute non-tuberculous lobar pneumonia, with tuberculous ulcers of the ileum.

Case 16. African female aged 66 years, admitted with a history of general weakness, cough and swelling of the feet. She was grossly malnourished and hypoproteinaemic.

Tuberculostatic treatment was begun empirically, but the patient deteriorated and died. Postmortem examination showed pulmonary tuberculosis and intestinal ulceration with serosal tubercles.

SUMMARY

A study of 19 cases of tuberculous enterocolitis is presented. The diagnosis of TBE was often unsuspected for several weeks, during which the clinical picture was that of a chronic diarrhoea with malabsorption and malnutrition. Some cases presented as an 'adult kwashiorkor' or pyrexia of unknown origin. Bacteriological or histological proof of tuberculosis was not often obtained. Sputum examination and gland biopsy were helpful in only 4 of the present cases. Chest radiology showed evidence of tuberculosis in 68% of cases and barium meal was of diagnostic help in 73% of cases in which this investigation was done. Empirical trial of therapy was frequently of great value when the diagnosis was suspected, but could not be proved.

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