

Tuberculous anal fistulas – prevalence and clinical features in an endemic area

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Abstract

Introduction. The aim of this study was to determine the prevalence of tuberculosis (TB) in anal fistulas at a referral hospital in Cape Town, and to document the clinical features and course of patients with tuberculous anal fistulas.

Patients and methods. This was a prospective study of all patients who underwent surgery for anal fistulas at the Colorectal Surgery Unit at Groote Schuur Hospital, Cape Town, from 2004 to 2006. Tissue was submitted for histopathological examination, Ziehl-Neelsen (ZN) staining and TB culture. The patients with proven TB were followed up until January 2008.

Results. During the 3-year study period, 117 operations were performed on 96 patients. TB was diagnosed in 7 of the 96 patients (7.3%). In 5 of these 7 cases, the diagnosis of TB could be proven on histological examination and ZN staining, while in 2 cases the diagnosis could only be made on TB culture. None of the 7 patients had systemic features suggestive of TB, and only 1 had evidence of TB on a chest radiograph. Five patients were HIV-negative, and 2 declined testing. After a median follow-up of 2 years, 5 of 7 patients had evidence of recurrent or persistent fistulas, despite having completed 6 months of TB treatment.

Conclusion. At a referral hospital in an endemic area, TB was present in 7.3% of anal fistulas. Histopathological examination including ZN staining was inadequate to make the diagnosis in a third of these patients. Tissue from anal fistulas should therefore routinely be sent for TB culture as well as histopathological examination and ZN staining in areas where TB is prevalent.

to determine the prevalence of TB in anal fistulas at a referral hospital in Cape Town, and to document the clinical features and course of those patients with proven TB.

Patients and methods

This was a prospective study of all patients who underwent surgery for anal fistulas at the Colorectal Surgery Unit at Groote Schuur Hospital (a tertiary referral centre in Cape Town) from January 2004 to December 2006.

All patients were examined under anaesthesia, and the fistula tract was identified if possible. The fistula tracts were curetted, and tissue was submitted for histopathological examination and TB culture. Ziehl-Neelsen (ZN) staining for acid-fast bacilli was performed on the fixed histopathology specimens.

Simple (intersphincteric or low trans-sphincteric) fistulas were laid open, and complex fistulas (where the operating surgeon was concerned about the amount of sphincter muscle involved) were initially treated by placing Seton drains.

A positive diagnosis of TB was made if *M. tuberculosis* was cultured, if acid-fast bacilli were identified on ZN staining, or if histopathological examination demonstrated the presence of caseating granulomas. The histopathology of all suspicious cases was reviewed by a single pathologist (D. G.).

All patients with proven TB were offered HIV testing and had chest radiographs performed. The X-rays were reviewed by a single radiologist (A. L.).

The patients with perineal TB were followed up until January 2008, and their clinical features and the course of their disease were documented.

Ethical approval for this study was granted by the Health Sciences Faculty Research Ethics Committee of the University of Cape Town.

Results

During the 3-year study period, 117 operations for anal fistulas were performed on 96 adults (68 men and 28 women). Specimens were sent for histological examination and ZN

Tuberculosis (TB) is an extremely rare cause of perineal sepsis in many parts of the world.^{1,2} In endemic areas, however, *Mycobacterium tuberculosis* may be the causative organism in a significant number of patients.³ The purpose of this study was

staining in 89 patients. Tissue was sent for TB culture in only 53 patients, all of whom also had tissue sent for histological examination.

TB was conclusively diagnosed in 7 of the 96 patients (7.3%). The histopathological, TB culture and ZN stain findings are summarised in Table I.

In 5 of these 7 patients, the diagnosis of TB could be made on the basis of the histological findings and/or ZN staining. In the other 2 cases (patients 6 and 7) the diagnosis was only made on TB culture.

Clinical features of the patients with proven TB

All of the 7 patients with proven TB fistulas were men, with a median age of 46 years (range 41 - 58). They all complained of perineal pain and purulent discharge from around the anus. The time from onset of symptoms to definitive diagnosis of TB ranged from 3 months to 9 years. None of the patients complained of constitutional symptoms of TB such as weight loss or night sweats.

A positive diagnosis of TB was made on the median second (range 1 - 4) biopsy taken. Two of the patients had previously been treated for pulmonary TB, but only 1 of the patients had radiological evidence of active pulmonary disease at the time of presentation with anal fistula. Five patients were HIV negative, and 2 declined testing.

At examination under anaesthesia, 5 patients were found to have multiple external fistula openings, and 2 had a single external opening.

All patients were commenced on standard four-drug TB therapy. After a median follow-up of 24 months (range 6 - 30 months), 5 of the 7 patients had persistent or recurrent fistulas despite having completed a 6-month course of TB treatment. None of the patients with persistent or recurrent disease had histological or microbiological evidence of ongoing tuberculosis on repeated biopsies.

Discussion and conclusion

Although TB is known to affect any organ of the body, anoperineal TB is an unusual manifestation of this disease. The gut is clinically involved in less than 5% of cases, and anal disease is uncommon even among patients with gastro-intestinal TB.^{4,5} In a study in France,¹ Sultan *et al.* reported 7 cases of TB out of 2 230 patients (0.3%) who underwent sur-

gery for anal fistulas or abscesses over 17 years. Kraemer *et al.*² in Singapore described 20 patients with TB out of 1 711 with anal sepsis (1.2%) over 9 years. In contrast, Shukla *et al.*³ identified TB in 16% of 122 patients with anal fistulas in India.

The prevalence of TB in patients with anal fistulas in this series was 7.3%, so it is not uncommon in our environment. This finding reflects the high prevalence of pulmonary TB in Cape Town, which was reported as 10/1 000 population in a recent community survey,⁶ but may also partly be due to referral bias, as the patients referred to our unit may represent more complex and longstanding fistulas than in the community generally.

All of our patients with TB were men, which is in keeping with previous reports (7/7, 18/20 and 18/19 patients were men in the series published by Sultan *et al.*,¹ Kraemer *et al.*² and Shukla *et al.*,³ respectively). The reasons for this are not known.

The long-term results of treatment of our patients were disappointing, and contrast with the excellent cure rates achieved by others.^{1,2} This may reflect the high rate of recurrent and incompletely treated TB in Cape Town generally,⁶ or may be due to inadequate surgery.

The diagnosis of anal TB is difficult, and may be missed for months or even years. This was our experience, and has been reported by previous authors.^{1,2} Histological examination is useful, but was only unequivocally positive in 3 of our patients. It may be extremely difficult to distinguish TB from other granulomatous diseases, especially Crohn's disease,⁷ by histology alone. ZN staining for acid-fast bacilli is simple, cheap and rapid, but may lack sensitivity and specificity.⁸ Mycobacterial culture has the disadvantage of taking up to several weeks to provide a result. Newer techniques such as polymerase chain reaction have shown promise,⁹ but are not yet in widespread use. A major weakness of this study was poor adherence to the unit's protocol in that tissue was only sent for TB culture in 53 cases. This suggests that the true prevalence of anoperineal TB may be underestimated.

Previous authors from non-endemic areas have recommended histological evaluation of fistula tissue to look for evidence of TB in cases where the appearance or clinical course of the fistula is unusual, or in patients who have previously been treated for TB.^{1,2} In our series we diagnosed TB in simple as well as complex fistulas, most patients did not have evidence of current or previous pulmonary TB, and none of

TABLE I. DIAGNOSTIC FINDINGS IN PATIENTS WITH PROVEN TUBERCULOUS ANAL FISTULAS

Patient	Age (yrs)	Histopathology	ZN stain	TB culture
1	58	Caseating granulomatous inflammation	Positive	Positive
2	44	Granulomatous inflammation	Positive	Positive
3	43	Caseating granulomatous inflammation	Negative	Not sent
4	41	Granulomatous inflammation	Positive	Positive
5	54	Caseating granulomatous inflammation	Positive	Negative
6	48	Inflammation – no granulomas	Negative	Positive
7	43	Granulomatous inflammation	Negative	Positive

them had convincing systemic symptoms to suggest TB. This is in keeping with the experience of Shukla *et al.*³ in India. We found that histopathological examination and ZN staining failed to diagnose TB in 2 of 7 patients. We would argue, therefore, that routine histological evaluation, ZN staining and culture for *M. tuberculosis* should be performed on tissue from all anal fistulas in TB endemic areas.

REFERENCES

1. Sultan S, Azria F, Bauer P, Abdelnour M. Anoperineal tuberculosis. Diagnostic and management considerations in seven cases. *Dis Colon Rectum* 2002; 45(3): 407-410.
2. Kraemer M, Gill SS, Seow-Choen F. Tuberculous anal sepsis. Report of clinical features in 20 cases. *Dis Colon Rectum* 2000; 43(11): 1589-1591.
3. Shukla HS, Gupta SC, Singh G, Singh PA. Tubercular fistula in ano. *Br J Surg* 1998; 75(1): 38-39.
4. Marshal JB. Tuberculosis of the gastrointestinal tract and peritoneum. *Am J Gastroenterol* 1993; 88: 989-999.
5. Mehta JB, Dutt A, Harvill L, Mathews KM. Epidemiology of extrapulmonary tuberculosis. A comparative analysis with pre- AIDS era. *Chest* 1991; 99(5): 1134-1138.
6. den Boon S, van Lill SW, Borgdorff MW, *et al.* High prevalence of tuberculosis in previously treated patients, Cape Town, South Africa. *Emerg Infect Dis* 2007; 13(8):1189-1194.
7. Epstein D, Watermeyer G, Kirsch R. Review article: the diagnosis and management of Crohn's disease in populations with high- risk rates for tuberculosis. *Aliment Pharmacol Ther* 2007; 25(12): 1373-1388.
8. Seow- Choen F, Hay AJ, Heard S, Phillips RK. Bacteriology of anal fistula. *Br J Surg* 1992; 79(1): 27-28.
9. Shan Y-S, Yan J-J, Sy ED, Jin Y-T, Lee J-C. Nested polymerase chain reaction in the diagnosis of negative Ziehl-Neelsen stained Mycobacterium tuberculosis fistula-in-ano. Report of four cases. *Dis Colon Rectum* 2002; 45(12): 1685-1688.