Tuberculosis of the appendix – a report of 17 cases and a suggested aetiopathological classification

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Summary: Tuberculosis of the appendix is rare. It is usually secondary to tuberculosis elsewhere in the abdomen. Tuberculosis of the appendix is not associated with any specific clinical features and diagnosis is revealed only after histopathological examination. Appendicectomy should be performed in all patients with abdominal tuberculosis subjected to laparotomy and all surgically removed appendices should be subjected to histopathological examination.

Introduction

Gastrointestinal tuberculosis is common in India, the commonest site of involvement being the ileocaecal region. Surprisingly, however, involvement of the appendix, lying so close to the ileocaecal region, is rare. The mechanism of appendicular involvement in tuberculosis is not clear, clinical presentation is varied and treatment controversial. We report 17 cases of tuberculosis of the appendix and suggest possible mechanisms of pathogenesis, describe the clinical features and advocate guidelines for treatment.

Patients and methods

Histopathological examination of all the surgically removed appendices (with right hemicolectomy or limited resection of the ileocaecal region, appendicectomy for acute inflammation, incidental appendicectomy) was performed. Diagnosis of tuberculosis was based on the presence of caseating epithelioid cell granulomas with Langhan's giant cells (Figure 1). Case records of all patients with tuberculosis of the appendix were reviewed.

Results

Seventeen cases of tuberculosis of the appendix were seen during a 10 year period (1975–85). They were classified into the following groups:

(1) Tuberculosis of the appendix associated with ileocaecal tuberculosis (10 cases). All these patients

presented with chronic abdominal symptoms suggestive of subacute intestinal obstruction. Clinical, radiological and per-operative diagnosis in these cases was ileocaecal tuberculosis. Right hemicolectomy or limited resection of the ileocaecal region was performed. Tuberculosis of the appendix was discovered on histopathological examination along with the ileocaecal lesion.

(2) Tuberculosis of the appendicular serosa (periappendicitis) associated with intestinal or peritoneal tuberculosis (2 cases). In one case periappendicular tuberculosis was associated with an ileocaecal lesion. In the other patient presenting with subacute intestinal obstruction, multiple adhesions were present between the ileum and the appendix. The adhesions were released and appendicectomy performed.

Figure 1 Microphotograph of the appendix showing caseating epithelioid cell granulomas with Langhan's giant cells (H.E. $\times 400$).

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med. Histopathological examination revealed tuberculous serositis.

(3) Tuberculosis of the appendix presenting as acute appendicitis (2 cases). In one, emergency appendectomy was performed during an attack of acute appendicitis while the other underwent interval appendectomy as he presented with a mass.

(4) Tuberculosis of the appendix associated with tuberculosis of the terminal ileum (one) and ascending colon (one). Both these patients underwent right hemicolectomy. Appendicular involvement was detected on histopathological examination; the ileocaecal region was not involved.

(5) Tuberculosis of the appendix incidentally detected (one). Incidental appendectomy was performed in a patient undergoing bilateral nephrectomy for chronic renal failure – histopathological examination revealed tuberculosis.

Discussion

Tuberculosis of the appendix is rare, accounting for 0.6% of all the surgically removed appendices.¹ An analysis of 1000 appendices revealed 4 cases of chronic granulomatous appendicitis of which only 2 were tubercular.² Chang could not find even a single case of tuberculous appendicitis in 3003 appendectomy specimens.³ Bobrow & Friedman⁴ collected 265 cases of tuberculosis of the appendix. Eighteen more cases have been reported.^{1,2,5–11} All are isolated reports of one or two cases except one study reporting an experience of 7 cases.⁸

Primary tuberculosis of the appendix with no detectable tuberculous focus elsewhere is rare. Post-mortem examination alone can confirm a diagnosis of primary tuberculous appendicitis, but for clinical purposes absence of evidence of tuberculosis after thorough investigation and at laparotomy warrants a diagnosis of primary tuberculous appendicitis.¹² The appendix is more commonly involved in tuberculosis secondary to the involvement of the ileocaecal region.⁷ Secondary tuberculosis of the appendix is also uncommon. In none of the 20 cases of ileocaecal tuberculosis reported by Shah *et al.*¹ was the appendix involved. This has been attributed to the minimal contact of the appendix with the intestinal contents.⁷

The appendix is involved by local extension of

ileocaecal or genital tuberculosis, haematogenous spread from a distant focus and contact with infected intestinal contents due to ingestion of food contaminated with tubercle bacilli.⁴

Based on our analysis of 17 cases, we suggest a new aetio-pathological classification of tuberculosis of the appendix: (1) secondary involvement: (a) local extension of ileocaecal tuberculosis (Group 1); (b) retrograde lymphatic spread from distant lesions in the ileum or ascending colon (Group 4); (c) appendicular serositis/periappendicitis in peritoneal tuberculosis (Group 2). (2) Primary involvement due to contact with infected intestinal contents or haematogenous spread from a distant focus which is not clinically detectable (Groups 3 and 5).

Three types of clinical presentation have been described: chronic disease with mild to moderate intermittent right iliac fossa pain associated with vomiting and diarrhoea indistinguishable from ileocaecal tuberculosis; acute obstructive appendicitis, and a latent type discovered incidentally.⁴ Pujari *et al.*⁸ reported 7 cases of tuberculosis of the appendix—3 with intermittent mild appendicitis, 2 with acute appendicitis and 2 with ileocaecal tuberculosis. Clinical diagnosis of the cases reported by Shah *et al.*¹ was chronic appendicitis. None of our patients had a pre-operative diagnosis of tuberculosis of the appendix. Diagnosis was made after histopathological examination in all the cases. The majority of the patients presented with symptoms due to the associated intestinal lesion (ileocaecal, ileal, colonic). Only 2 patients presented with acute appendicitis. Acute inflammation of a tuberculous appendix is usually due to secondary infection with intestinal organisms.⁴ Laboratory and radiological investigations are of no value in diagnosis which is always histopathological.

Surgery is advocated as the treatment of choice for tuberculosis of the appendix because antituberculous drugs alone cannot control recurrent attacks of inflammation.⁶ Anti-tuberculous drugs are administered along with surgical treatment to control local complications such as sinus formation.⁸ We advocate appendectomy in all patients with abdominal tuberculosis (gastrointestinal, genital, peritoneal, nodal) and anti-tuberculous treatment if histological examination of the appendix removed for acute inflammation or incidentally during a laparotomy reveals tuberculosis.

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