

Review Article

Abdominal tuberculosis: a surgical perplexity

Ketan R. Vagholkar*, Shantanu Chandrashekhar, Suvarna Vagholkar

Department of Surgery, D.Y. Patil University School of Medicine, Navi Mumbai 400706, Maharashtra, India

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***Correspondence:**

Dr. Ketan R. Vagholkar,

E-mail: kvagholkar@yahoo.com

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ABSTRACT

Abdominal tuberculosis is one of the most challenging forms of extra pulmonary tuberculosis. The diagnosis of the disease itself poses the greatest challenge due to the variability of presentation. Clinical presentations in various forms with conflicting results on a multitude of haematological, immunological and radiological tests causes a lot of confusion in interpreting and correlating the symptoms to arrive at a diagnosis. This adds to the perplexity in surgical management of this complex disease especially in an era where AIDS has added to the problems. Having arrived at a diagnosis, chemotherapy is the mainstay of treatment. Surgery is indicated when the response to medical therapy is poor or complications supervene. Deciding the optimum procedure is again a major issue. Understanding the pathophysiology therefore is pivotal in making a value decision. The article briefly outlines the approach to this surgical perplexity.

Keywords: Abdominal tuberculosis, Pathology, Investigations, Diagnosis, Surgical, Complications, Treatment

INTRODUCTION

Tuberculosis (TB) continues to be a multisystem disease posing the biggest diagnostic challenge to even the most experienced of clinicians. Increased population mobility across the globe has led to TB assuming epidemic proportions. Both the developed and developing nations are equally affected these days by the spreading epidemic. Abdominal tuberculosis is assuming alarming proportions especially in the developing world where AIDS has added to the complexity of the disease process and presentation.¹

The etiopathogenesis, spread and variability of presentation need to be studied closely in order to create a good awareness which will aid in early diagnosis of the disease. Tuberculosis can involve any part of the gastrointestinal tract from the oral cavity to the anal opening. Within the close confines of the abdominal cavity it can involve the peritoneum, lymph nodes, intestines as well as individual solid organs.²

REVIEW OF LITERATURE

Abdominal tuberculosis continues to be one of the greatest challenges to the general surgeon. A clear diagnosis of abdominal tuberculosis is difficult in majority of cases. With the advent of the AIDS epidemic the issue has become more complex. Diagnostic challenges and drug resistance lead to complications which may be life threatening in most cases if not adequately managed. Laparoscopy has a major role to play in diagnosis. Indeterminate lesions on investigation can best be confirmed by laparoscopy. Surgery is indicated when complications supervene.²⁻⁴ The traditional surgical approaches still hold true. Acute cases presenting as perforative peritonitis require immediate laparotomy while chronic presentations require resection. However, the pros and cons of each surgical option need to be understood and individualized based on findings.⁵⁻⁷ For acute cases exteriorization is the safest option. While

for elective cases right hemicolectomy is still the best option. Bypass procedures may be considered in a few cases.^{8,9} Stricturoplasty is best suited for isolated strictures in the terminal ileum. For cases presenting with intra-abdominal findings of a cocoon the options are very limited. Heroic attempts at dissection should be best avoided.¹⁰⁻¹² Therefore understanding the pathophysiology of lesions is of utmost importance in deciding the best surgical option.

DISCUSSION

The commonest strain of tubercle bacilli causing infection in humans is the human strain of mycobacterium tuberculosis. The organism reaches the gut through various routes. Direct ingestion of bacilli in sputum from an active pulmonary focus is still a very common way of acquiring infection besides the direct oral route. Haematogenous spread from lungs with later reactivation is also described.³ Isolated involvement of lymph nodes via lymphatics is seen in the abdomen wherein both mesenteric as well as retroperitoneal lymph nodes are affected. The most important part in the abdomen which is infected with mycobacterium tuberculosis giving rise to maximum morbidity and mortality is the terminal ileum and ileocecal (IC) junction.^{4,5}

Various hypothesis has been put forward to explain the predilection of the IC junction. Increased physiological stasis with an associated increased rate of fluid and electrolyte absorption due to digestive activity in a region with abundance of lymphoid tissue predisposes to tuberculous infection. Peritoneal involvement may be from lymph nodes, intestinal lesions or from tubercular salpingitis in women.⁶ All three types of abdominal TB viz. intestinal, peritoneal or lymph node involvement can occur together in a single patient or in a mutually exclusive pattern. TB granulomas characterised typically by central caseation surrounded by a thin rim of Langhan's giant cells and epithelioid are pathognomonic. In the intestines, the disease cells affects the lymphatics thereby leading to circumferential ulcers which cicatrize leading to strictures. Endarteritis is a common accompaniment of TB which leads to ischaemia and development of strictures by way of occlusion of vessels. Final outcome in the intestine is therefore strictures predominantly involving the terminal ileum.^{7,8} Morphology of intestinal lesions is determined by the immunological status of the patient. Ulcerative lesions are seen in malnourished individuals whereas hyperplastic lesions are seen in well-nourished individuals. A third variant ulcero-hyperplastic is seen in chronic IC lesions. Lesions of the IC junction are typical. The junction is grossly distorted and assumes an obtuse angle with involvement of either side of the IC valve.⁹ The valve eventually becomes incompetent. Lymph node involvement leads to matted masses of lymph nodes with central caseation.¹⁰ Peritoneal tuberculosis manifests with formation of hyperemic areas with loss of normal shining

lustre, increased surface areas with multiple yellowish white texture.¹¹ The omentum is thickened. Exudative fluid formation is exuberant. Based on volume of fluid formed peritoneal lesions may be classified into wet or ascitic type, encysted or loculated (collection is localised) and fibroadenoid type which may manifest a mass like lesion due to parietal wall thickening.^{12,13}

The clinical presentation exhibits a great variability due to the complexities of the pathological process. Therefore, abdominal tuberculosis is typically described as the great masquerader of a variety of abdominal diseases ranging from infection to cancer. As a result, the incidence of misdiagnosis and mismanagement is very high. Clinicians from the developing world are more aware of the diversity. A symptom complex which does not fit the picture of the disease despite close resemblance in symptomatology should raise the suspicion of abdominal TB. Based on severity of symptoms the patterns of presentation can be classified as acute, acute on chronic and chronic types.^{11,12}

Acute presentation is usually associated with perforative peritonitis. Acute on chronic may manifest with severe excruciating pain accompanied with systemic symptoms usually seen in lesions affecting the IC junction. Severe mesenteric lymphadenitis with exuberant peritoneal reaction can also give rise to a sudden exacerbation of the disease symptoms. The chronic pattern of manifestation usually manifests with chronic pain accompanied with constitutional symptoms. Abdominal signs may be subtle in a few cases. Differentiation from Crohn's disease may be difficult. This can be done only on histological study of the specimen. However, a lump may be palpable in acute on chronic and chronic presentations. Immunocompromised hosts especially HIV positive patients may present with subtle signs in a few cases. However, a lump may be palpable in acute on chronic and chronic presentation. Immunocompromised hosts especially HIV positive patients may present with subtle signs and symptoms thereby making the diagnosis difficult. Esophageal gastroduodenal and anorectal TB are commonly seen in HIV positive patients.¹³

A variety of laboratory tests are usually carried out with a hope to confirm diagnosis however results of laboratory tests are either negative or equivocal in a majority of cases. A multitude of immunological tests are made available, but the diagnostic efficacy and cost limit the widespread use of these fancy tests. The Xpert MTB/RIF assay though has low sensitivity for intestinal TB but high specificity for intestinal TB in endemic areas. It is also helpful in differentiating abdominal TB from Crohn's disease.¹¹ Imaging is a very important aspect of diagnostic studies. A chest x ray which reveals active TB, or an old fibrotic lesion may be a strong indication of the presence of the disease process. Sonography is useful in a few cases which present with a lump, free fluid and lymph adenopathy. Pseudo kidney sign due to sub hepatic location of IC junction may be diagnosed by

sonography.²⁻⁴ Enteroclysis and barium meal follow through continue to be promising investigations for diagnosis. Lifting up and distortion of the IC junction, clumping of bowel loops, hyper segmentation of small bowel loops are a few important signs on radiological investigation. Contrast enhanced CT scanning gives a broad preview of the peritoneal cavity. Majority of lesions can be picked up well by this single investigation. Diagnostic laparoscopy is a great adjunct to the diagnosis of abdominal TB as well. It not only provides direct visualisation of abdominal TB but also enables one to obtain biopsy specimens from peritoneal surfaces as well as lymph nodes. Endoscopy in the form of colonoscopy may be helpful in diagnosis of lesions of the colon and anorectal region.¹⁴

The onus therefore lies on the clinician to analyse every symptom, sign and report in order to decide the best diagnostic modality to confirm the diagnosis.

The treatment for non-acute presentation is chemotherapy. Newer short-term regimens have led to increasing resistance. Therefore, the traditional nine month regimen still holds the best promise especially in case of concomitant HIV infection. A regimen comprising of four drugs in the first three months followed by two drugs for the remaining six months yields good results. However, one needs to be cautious about the toxicity of antituberculous chemotherapy. All patients on chemotherapy should be carefully monitored for objective and subjective assessment of chemotherapy especially in patients presenting with lump.

The resolution of the lump needs to be closely monitored on a persistent basis. If the lump still persists, surgical intervention is indicated.

Surgical intervention in abdominal TB is an adjunct to chemotherapy. Acute cases presenting with perforation or failure of resolution of lump despite patient being on treatment are two main indications for surgery. For patients presenting with perforative peritonitis, the cause is a stercoral perforation proximal to a stricture. Heroic surgery is to be best avoided. Exteriorization is the safest and best option. For patients presenting with symptoms and a lump despite antituberculous chemotherapy, three types of surgery have been described -bypass surgery, radical surgery and conservative surgery.¹⁴⁻¹⁶

Non resectable lumps are best suited for bypass surgery whereas a resectable lump is best suited for right hemicolectomy. Conservative surgery in the form of stricturoplasty is mainly indicated for strictures. However if there are multiple structures in close proximity to the IC junction, right hemicolectomy is still the best option.¹⁷ In a few cases a surgeon may encounter a cocoon during laparotomy.¹⁸ In such cases no attempt should be made to dissect the cocoon. This could lead to inadvertent perforations and the chance of faecal fistula.¹⁹⁻²¹

CONCLUSION

Variability in presentation of various forms of abdominal TB in the current scenario is therefore a cause for serious concern due to which the incidence of misdiagnosis continues to be high. A high index of suspicion based on adequate knowledge of risk of disease process and experience are pivotal in early diagnosis. This is the biggest diagnostic perplexity confronting the surgical community. An ideal and accurate diagnostic investigation continues to be an enigma for the surgeon. Contrast enhanced computerized tomography accompanied by a diagnostic laparoscopy has undoubtedly reduced the incidence of delayed diagnosis. Surgeons all over the world need to be aware of this intricate and deceptive disease by sharing their experiences. An enormous number of studies on the disease process have been published from the Asian subcontinent. Due to large scale emigration, the incidence of the disease in the developed world has slowly picked up. The presentation in these two groups is quite diverse adding to the perplexity of diagnosis. This needs to be studied extensively with meta-analysis of data from both the groups. This can help in developing a rational algorithm for proper diagnosis followed by prompt treatment of abdominal tuberculosis.

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