ABDOMINAL TUBERCULOSIS

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INTRODUCTION

Several recent developments, which have influenced the incidence as well as clinical course of tuberculosis in general, warrant a fresh look at abdominal tuberculosis. The availability of several effective combinations of potent anti-tuberculosis drugs and the general improvement in the living and nutritional standards of large segments of populations in many countries have expectedly led to a decline in the incidence of tuberculosis\(^1\). The pattern of clinical presentations of abdominal tuberculosis has also changed. The bovine form of the disease is almost non-existent\(^2\). In the more developed nations, tuberculosis is often seen in the old, rather than the young, and more often at extrapulmonary sites than lungs\(^3\). The emergence of multi-drug resistant bacilli\(^3\), on the other hand, and the rapid spread of HIV-AIDS\(^4,5\) have posed newer threats and added a new dimension to the control of tuberculosis. Underestimating the incidence of tuberculosis in a population or holding an inappropriately low index of suspicion in individual patients with abdominal symptoms may lead to undesirable consequences.

A review of abdominal tuberculosis has also become pertinent at this stage in order to determine the role of a number of newer diagnostic techniques, which now supplement the traditional methods. Endoscopic visualisation, imaging techniques using sonography, CT or MRI, and advances in bacteriology and immunology have resulted in profound changes in the management of abdominal tuberculosis.

There is considerable variation in the incidence of abdominal tuberculosis in different ethnic groups. The disease is endemic in South East Asian and Latin American countries. In the United Kingdom, immigrants from Asia are significantly more prone to this disease compared to the native population\(^6\). In the U.S.A. all forms of tuberculosis are seen amongst the immigrant population, people residing in the north American Indian reservations and in patients suffering from HIV-AIDS\(^7,8\).

The symptoms and signs of abdominal tuberculosis are often non-specific. This is not surprising since the disease may involve multiple different sites within the abdomen, with different morphological patterns. A palpable mass may be formed by the rolled up omentum or matted bowel loops. These may be the only physical signs in tuberculous lymphadenopathy of the mesenteric glands. Associated caseation and suppuration of the glands may result in traction diverticula of the colon. The peritoneum, when involved, may be covered with multiple tiny whitish nodules (tubercles) associated with multiple adhesions, presenting with abdominal pain, a “doughy” feel and varying degrees of intestinal obstruction. Over 90% patients with peritoneal involvement present with tuberculous ascites\(^9\).

Alteration in bowel habits is the predominant symptom when the gut lumen is involved. The common sites are jejunum, terminal ileum, caecum and colon. The jejunal and ileal varieties are associated with multiple mucosal ulcerations, and present with diarrhoea. Healing of ulcers with fibrosis and cicatrisation may result in intestinal obstruction in about 20% patients\(^10,11\). The ileocaecal lesion is characterised by a hyperplastic, granulomatous mass in the right lower quadrant of abdomen, along with alteration in bowel habits; diarrhoea may alternate with constipation. Segmental involvement of the colon may occur anywhere in its entire length\(^12\), but the flexural areas are involved more often. The mucosa shows ulcerations and pseudopolyposis. Fibrous strictures may lead to subacute or acute obstruction and perforation. Massive bleeding per rectum is an uncommon feature. Tuberculosis may involve other parts of the digestive system too, e.g. oesophagus, stomach, duodenum and anorectal area. Isolated tuberculosis of liver, spleen and pancreas have also been described\(^13\). The signs and symptoms in these cases are related to the organ of involvement.

In all the above situations, the general features of

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tuberculosis toxemia are usually, but not necessarily, present. These include prolonged low grade fever, anorexia, weight loss and night sweats. The author has seen patients with pyrexia of unknown origin as the only manifestation of colonic tuberculosis. Amenorrhoea is a common symptom in young women.

When the disease occurs in patients infected with HIV, it is almost invariably a part of disseminated tuberculosis. Clinical deterioration is rapid and the outcome almost always fatal, even though the tuberculosis lesions may initially respond to chemotherapy. According to a report from India, HIV sero-positivity prevalence in patients of abdominal tuberculosis is significantly higher (16.6%) compared to pulmonary tuberculosis (6.9%).

DIAGNOSIS

A combination of constitutional symptoms, abdominal pain and alteration in bowel habits, with or without a palpable lump, suggest to the clinician the possibility of abdominal tuberculosis. Routine investigations of blood, urine and stools are non-specific. Elevated ESR, when present, may help in following up a case during the course of therapy. Mantoux test has little diagnostic value. Evidence of pulmonary tuberculosis, on chest X-ray, may be present only in about a fifth of all the cases of abdominal tuberculosis. The recently developed serological tests using ELISA technique and soluble antigen fluorescent antibody (SAFA) tests have shown a sensitivity of 80-84% and specificity of 88-95% in intestinal tuberculosis. However, more work is needed before they can be accepted as clinically useful tests. The Polymerase Chain Reaction (PCR) tests for mycobacterial DNA are far more specific and sensitive but are not, at present, commonly available. Diagnostic efforts in individual cases are guided largely by the presumptive site of the lesion.

Tuberculosis involving lymph nodes in the abdomen can be convincingly demonstrated by sonography and/or CT scan which may be supplemented by fine needle guided biopsy. Sonographic criteria have been described for distinguishing HIV-AIDS patients having non-specific abdominal symptoms from those with abdominal tuberculosis.

Some Japanese workers have recently reported their findings on magnetic resonance imaging in patients with abdominal tuberculosis, but no pathognomonic features have been described. Calcification in lymph glands can best be picked up on plain skiagrams of the abdomen. Laparotomy is seldom, if ever, needed just for making the diagnosis. However, if surgery is undertaken because of clinical indications, the opportunity should be utilised for collecting adequate specimens for making tissue diagnosis.

Peritoneoscopy has proven to be very useful in diagnosing peritoneal tuberculosis. The presence of multiple, whitish, tiny nodules on the parietal as well as the visceral peritoneum covering various organs is diagnostic, specially if supplemented by the demonstration of acid fast bacilli in biopsy specimens. Thin, veil-like, filamentous adhesions running between the visceral and parietal peritoneum, often in the region of liver, are also strongly suggestive of the presence of peritoneal tuberculosis. Target biopsies from focal lesions of liver using a Menghini needle provide histopathological confirmation. Peritoneoscopy is generally safe. However, complications, including death, may occur specially when the peritoneal cavity is divided into irregular compartments by serous adhesions. Inability to create a satisfactory cushion of pneumoperitoneum in such cases compromises visibility and may lead to traumatic hemorrhage and/or perforation. The ascitic form of peritoneal tuberculosis is investigated by paracentesis and examination of the fluid which is straw coloured and has a protein content of over 2.5 g/dl. The difference between serum and ascitic albumin of less than 1.1 g/dl supports the diagnosis. The cell count in most cases is over 1000 per cm\(^2\) but may range from 150 to 4000 per cm\(^2\). Lymphocytes predominate. Occasionally, a fair number of red blood cells are also present but frank haemorrhagic ascites is relatively uncommon and warrants a vigorous search for malignancy. Exfoliative cytology may be positive in the latter case. The fluid is sterile on culture for pyogenic organisms. Inability to demonstrate AFB, either on direct smear examination (positive in less than 3% of the cases) or on culture (positive in less than 20% of the cases) is a definite handicap. Peritoneal biopsy using a Cope’s needle in patients with tuberculous ascites may be helpful but the diagnostic yield is low. The use of a chemical test to detect adenosine
deaminase activity is under investigation and may prove useful, particularly in situations where laparoscopy is not possible. A value of less than 50 u/l is considered highly sensitive with few false positives.

Tuberculosis of the intestines, particularly colon, caecum and the terminal ileum are investigated by colonoscopy. Demonstration of well demarcated segments showing granulomatous thickening of the mucosa, ulceration and pseudopolyposis, with or without stricture formation is highly suggestive of intestinal tuberculosis. While the demonstration of AFB in mucosal biopsies or culture is usually difficult, the presence of caseating granuloma has high diagnostic value even though present in less than half of the biopsy specimens. This could perhaps be explained by the fact that superficial mucosal lesions often result from endarteritis of submucosal vessels rather than from direct invasion of the mucosa by *M. tuberculosis*. Despite these limitations, colonoscopy is an indispensable tool in the diagnosis of ileo-colic tuberculosis by virtue of its ability to satisfactorily exclude other common colonic lesions, e.g. cancer, Crohn’s disease, polyposis coli, ulcerative colitis and amoeboma. CT scan and contrast radiography of small and large bowels with barium may demonstrate the presence of a diseased segment but lack the ability to discriminate between malignant and benign diseases, and among benign diseases, the diverse aetiologies.

**MANAGEMENT**

The basic approach to the management of abdominal tuberculosis is chemotherapeutic, and the general principles guiding chemotherapy are the same as for pulmonary tuberculosis. Standard drug regimens as well as short-term chemotherapy are effective. In most cases, a combination of Rifampicin (600 mg), INK (300 mg) and Pyrazinamide (2 gm) is used daily for the first two months, followed by Rifampicin and INH (same dosage) for the next four months. Some clinicians add oral corticosteroids in dosage of 20 to 40 mg daily for the initial 2-3 months, particularly when serous membranes are involved on the assumption that late complications resulting from fibrosis and cicatrization are minimised. However, evidence in favour is, at best, equivocal. Care has to be taken to avoid these hepato-toxic drugs in patients with evidence of hepatocellular dysfunction. Under such circumstances, a combination of Streptomycin and Ethambutol is considered safe. Patients with recurrent disease, drug resistance or serious illness may require addition of Streptomycin and/or Ethambutol to the three-drug combination mentioned above, with extension of the initial period of treatment to three months, following which they are continued on Rifampicin, INH and Ethambutol for the next five months. Nearly 80% of patients respond to chemotherapy. Supportive measures like good nutrition and multi-vitamins help to correct deficiencies, which are often present. Concomitant administration of Pyridoxin (vitamin B 6) reduces the chances of INH neuro-toxicity.

Surgery is no longer recommended, either for confirming the diagnosis or as the first line approach to the management of uncomplicated abdominal tuberculosis. However, patients with acute and sub-acute intestinal obstruction, who do not respond to conservative measures, must be treated surgically. Diseased segments of bowel with adequate free margin are removed, avoiding extensive resection. Surgery is also needed in patients with a free perforation or perforation associated with abscess formation. If ascites is present, it is evacuated and the abdomen closed without leaving drains. Approximately one fifth of patients require surgical intervention.

It will be appropriate to make a mention of the use of therapeutic trial in suspected cases of abdominal tuberculosis. As mentioned earlier, a precise histopathological diagnosis is difficult in many cases. If the clinical, radiographic and endoscopic data are consistent with the diagnosis of abdominal tuberculosis, and are adequate to rule out other common diseases, e.g. cancer, non-specific inflammatory bowel disease and other specific infections, it is considered appropriate to give a 10 to 12 weeks trial anti-tuberculosis chemotherapy. Corticosteroids are best avoided in such trials since the non-specific improvement in general and local conditions may mislead. Second line anti-tuberculosis drugs are used in those patients who cannot tolerate the first line drugs for any reason or those infected with resistant bacteria. There are some unconfirmed reports of the use of immunotherapy in combination with second line drugs in patients infected with multi-drug resistant bacilli.
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