Enteroliths in Tuberculous Strictures of Intestines

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Abstract

Eight cases of opaque enteroliths associated with tuberculous strictures are described. Long history of chronic partial intestinal obstruction with occasional episodes of acute attacks managed by conservative treatment was the presenting feature in all cases. Plain X-ray revealed solitary (6 cases) or multiple (2 cases) radio-opaque densities showing wide mobility on successive roentgenograms. The enteroliths had a peripheral dense rim and in some X-rays 'coin-on-end' position indicating disc shaped configuration. Multiple enteroliths were either closeted together or widely separated indicating free longitudinal mobility inside the dilated loop of intestines proximal to a stricture. Intraluminal location was documented in three cases on barium studies. In three cases enteroliths were submerged in the barium filled dilated loop of intestines. One case had associated cholelithiasis and choledocholith without any evidence of communication between the biliary and gastrointestinal tract.

Key word: Enteroliths in tuberculous strictures of intestines.

Introduction

Enteroliths or stones in the gastrointestinal tract are formed as a result of intestinal stasis due to diverticulae, stenosing lesions of the gut like tuberculosis and Crohn's disease, meconium ileus in infants, carcinoid tumour and following strangulation or intestinal surgery. The first reported case of enteroliths consisted predominantly of magnesium sulphate used as an aperient for relief of chronic constipation. Holmstrom2 reported six cases of enteroliths; three out of these were associated with tuberculous strictures of the ileum. Also there have been a few reports3-7 from India of enterolithiasis associated with tuberculosis of intestines. The present communication is based on eight cases of opaque enteroliths of small intestines associated with tuberculous strictures.

Observations

Four out of eight cases were males and four females. All patients had a prolonged history ranging from two to five years of chronic intestinal obstruction with superadded acute episodes managed by conservative treatment. History of low grade fever and loss of appetite was present in all cases. In four patients there was a history of diarrhoea alternating with chronic abdominal distension.

General physical examination showed poorly nourished and anaemic patients. One patient had tenderness in the gall bladder region and subsequent studies revealed cholecystitis, cholecystolithiasis and an enterolith.

All patients had raised erythrocyte sedimentation rate. All but one had positive Mantoux test. No evidence of active tuberculous lesions was detected on X-ray of chest. Calcified pulmonary nodular lesions, however, were present in four patients. Plain X-ray abdominal done in the erect position in two cases who presented with acute intestinal obstruction showed multiple air fluid levels due to small bowel obstruction and a dense opaque shadow of the enterolith. In other 6 cases routine plain X-ray abdomen done in recumbant position revealed single or multiple shadows. The radio-opaque shadow/shadows had a peripheral dense rim surrounding a less radioopaque central area. On successive plain abdominal X-rays the calcii changed their position as well as their configuration from roundish or oval shape to coin-on-end shape. In two cases of multiple enteroliths there was wide separation in successive X-ray pictures inspite of being closeted together in the initial X-ray (Figs 1 A and 1 B). With these findings on plain X-ray, a tentative diagnosis of enteroliths was made in all cases. Only in two cases there was need to exclude renal calculi by excretory urography.

For confirmation barium meal follow through studies were done in 6 cases under fluoroscope control. In three cases intraluminal location of the enterolith as a filling defect was documented (Fig 2). In three other cases dilated loop of intestine proximal to a stricture drowned the multiple enteroliths, thus making their documentation impossible. In three patients neither a definite stricture nor a dilated coil of intestine was demonstrable, although the diagnosis of enterolith was made on plain X-ray findings. Cases with intraluminal documentation of an enterolith did not show significant dilatation of the gut proximal to the enterolith.

On planned surgical exploration all the patients had multiple strictures and on subsequent histologic examination were proved to be tuberculous in nature. Excision of the strictures with the enteroliths and various bypass procedures were done. Cholecystectomy was done in the patients who also had cholecystitis with cholelithiasis. No evidence of communication between the biliary and the gastrointestinal tract was discovered on surgery. All patients were put on anti-tuberculous drugs after the surgery. In three cases chemical analysis of calculi revealed bile acids, bile pigments and calcium but no cholesterol.

Discussion

True enteroliths are formed as a result of precipitation and deposition of substances present in the alimentary
chyme. They are either nonopaque choleic acid calculi or opaque stones formed of calcium salts. Often these calculi have a nidus of bacteria, cellular debris or even a fruit stone. While nonopaque enteroliths are formed in the upper small intestines where an acid medium is conducive to the deposition of choleic acid, the enteroliths of calcium salts are formed in the lower reaches of the small intestines where the reaction is alkaline in which calcium salts get precipitated easily. Intestinal stasis changes the reaction and flora and promotes clumping of bacteria for nidus formation. Patients with chronic partial intestinal obstruction postponing surgical exploration for a long time are the prospective candidates for the development of enteroliths. Most of our cases and the ones reported in the literature had a fairly long history of chronic intestinal obstruction with occasional acute attacks relieved by conservative management.

Most Indian reports are limited to either one or two cases of enteroliths only. The largest series of 13 cases of enteroliths amongst 400 cases of intestinal tuberculosis giving an incidence of 3.25% is reported by Chawla et al. The present communication of eight cases of enteroliths associated with tuberculous strictures appears to be the second largest series. Low dietary intake of calcium in patients coming mostly from poor socio-economic status and the high phytate content of the large residual food consumed by Indians are suggested as possible reasons for rarity of enteroliths in tuberculosis of the intestines in India.

Enteroliths are of significance primarily because they represent the clinical diagnostic clue to the presence of a diverticulum or stenosing lesions of small intestines which may cause obstruction.

A diagnosis of enterolith can be made by considering the condition more frequently while evaluating an atypical opaque shadow in the abdomen. Plain X-ray examination prior to any contrast study should never be omitted. Negative pyelographic and cholescintigraphic studies in some cases supply the guidelines for further radiologic studies. Successive plain roentgenograms show that calculi move widely in relation to fixed structures. This wide mobility of calculus or multiple calculi having a peripheral dense rim is an
important diagnostic feature of enterolith. Mobility of enteroliths is attributed to the mobility of mesentery as well as longitudinal motion of a stone or stones within the bowel lumen as a result of peristalsis and antiperistalsis.¹²

In 6 out of 8 cases change in the position of enteroliths on successive plain roentgenograms produced oblique-projection indicating disc-shaped rather than oval configuration of enteroliths. This observation appears to be peculiar to enteroliths and when discovered should be considered diagnostic.

Another interesting finding discovered in two cases of multiple enteroliths was wide separation of enteroliths in the successive X-rays inspite of being closest together in earlier X-rays. In both the cases subsequent barium meal studies revealed dilated loop of intestines proximal to a structure. Barium appeared to obscure the enteroliths in such loops making them unidentifiable. Dilated loops are presumed to allow free longitudinal movement of enteroliths in the bowel lumen leading to wide separation or closting.

Demonstration of a filling defect on barium follow-through studies corresponding to the size of a calculus is the direct diagnostic evidence of an enterolith. We were fortunate to get such an evidence in three cases. Painstaking examination preferably under image intensifier fluoroscopic control with frequent fluorographic X-ray pictures enhances the incidence of intraluminal documentation of an enterolith.

Gall stone ileus can mimick a true enterolith with obstruction. However, a gall stone large enough to obstruct the bowel has to reach the intestinal lumen only by erosion directly from the gall bladder or the common bile duct, the resulting fistula permitting air or the contrast medium to enter and outline the biliary tract. Considering the small number of reported cases which have an association of cholelithiasis and enteroliths like in one of our cases, such an association might be fortuitous.

References
1. Ostrum HJ (1968) Quoted by Singleton.¹¹
2. Hellstrom J (1929) Quoted by Atwell and Pollock.¹³