

Widespread tuberculous calcification

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ABSTRACT

We are reporting an unusual case of widespread abdominal calcifications, in the peri-colic mesentery, liver and spleen. The diagnostic laparoscopy showed multiple encapsulated calcified hard rounded masses of varying size and shape, with marked adhesions in and around the bowel and mesentery. Histopathology identified them as calcified lymph nodes, but was unable to highlight the pathogenesis of these calcifications. The diagnosis of post tuberculous calcification of lymph nodes is made on the basis of exclusion. The subject was reviewed, to the best of our knowledge, there is no similar case, with such an extent of abdominal calcifications reported in the literature.

Keywords: Abdominal calcification, tuberculous calcifications, mesenteric lymph node calcification.

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Widespread abdominal calcifications encountered radiographically have been discussed in considerable details in medical literature, and systematically reviewed in the past.^{1,2} Abdominal lymph node calcifications are among one of the most frequently observed opacities on plain films of the abdomen. Most often, nodal calcifications are easily recognised, but occasionally they can be mistaken for other radio-opacities such as ureteral stones, appendicoliths, and uterine leiomyoma. In adults, only a few conditions produce areas of calcifications widely scattered throughout the abdomen, these include abdominal tuberculosis, histoplasmosis, pseudomyxoma peritoni, fat nodule calcifications, hydatid or armillifer armillatus infestations, post necrotic calcification of the appendices, epiplocae of the large bowel, remnants of radio-opaque dye, and phlebolith in hemangiomas.

Case Report. A thirty year old, male, Saudi policeman, of average built, resident of the south-eastern region of Saudi Arabia, was attending various clinics with the complaints of vague abdominal pain, altered bowel habits, flatulence and gaseous

distension of abdomen since 1989. He was diagnosed and treated in various clinics for irritable bowel syndrome. The patient was referred to Dammam Central Hospital in June 1992, when his plane x-ray of abdomen showed a striking finding of multiple extensive calcified rounded solid shadows of varying size (1-3 cm) and shape, scattered all over the abdomen in the anteroposterior view (Figure 1a). The calcified shadows moved over a fairly wide area, when the films were taken in different positions such as recumbent and upright (Figure 1b), the free mobility indicated that the probable site of lesion was the mesentery. There was no past history of any major illnesses, including tuberculosis, that required prolonged treatment or hospitalization. No history of contact with birds or rodent animals was obtained. The clinical examination was normal, except mild tenderness all over the abdomen. Hematological and biochemical investigations were within normal limits. Barium enema studies and barium meal follow through examinations confirmed the extraluminal distribution of calcified masses. Ultrasound examination showed multiple solid calcified masses in the mesentery. Computerized

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Figure 1a - Plane x-ray abdomen AP view (in supine position) showing multiple rounded densely calcified shadows of varying size and shape over the pericolic area, liver and spleen.



Figure 1b - Plane x-ray abdomen AP view (in erect position) showing the calcified shadows freely moved towards the pelvis in the upright position.

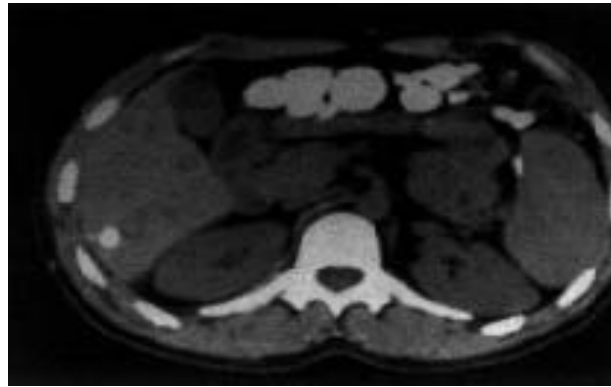


Figure 2 - CT scan abdomen demonstrated hyperdense calcified masses located in the mesentery.



Figure 3a - Showing rounded, calcified masses of varying size and shape over the pericolic mesentery.



Figure 3b - Cross section of the calcified lymph node showed a capsule filled with white chalky material

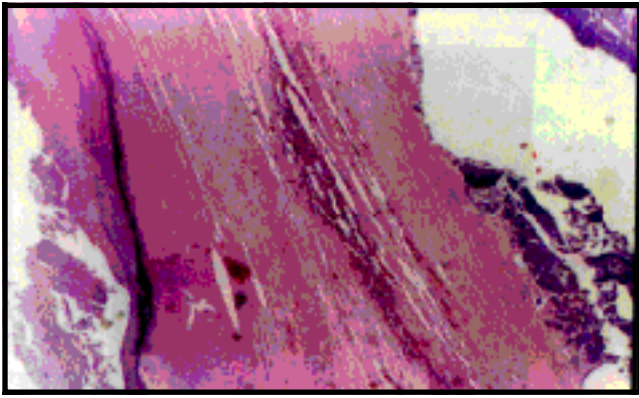


Figure 4 - Two matted lymph nodes with capsule and lymphoid tissue in the center and darkly stained material on both sides with calcification, and ossification on the right side.

tomography (CT) scan also demonstrated multiple calcified masses around the large bowel (Figure 2), spleen and liver tissues. Colonoscopy examination showed rounded external pressure marks inside the lumen of the colon, suggesting that the calcified masses were extraluminal. Specific serological tests for *Echinococcus granularis* were negative. Tuberculin test was also negative. CT guided aspiration of calcified masses was tried, but the histopathological assessment was inconclusive. The patient refused laparoscopic biopsy, and left the hospital against medical advice. He was lost to follow up for 4 years, however in October 1996, he was admitted again through casualty, with the complaints of recurrent episodes of severe abdominal pain and occasional vomiting. There were no signs of intestinal obstruction or peritonitis. His symptoms responded well to conservative medical treatment. Hematological, biochemical and radiological investigations were not significantly different from the previous ones, including CT scan and ultrasound. The patient underwent the diagnostic laparoscopy, which showed mesenteric adhesions and wide spread hard, rounded calcifications (Figures 3a and 3b). Adhesions were released and appendectomy performed. The appendix also showed the calcified nodules adherent to serosa. Surprisingly, the calcifications were only seen around the colonic mesentery. Calcifications were also seen over the surface of liver and spleen. The histopathological examination of the calcified masses showed the structure of lymph nodes, completely replaced by darkly stained material with calcification and areas of ossification. Two matted lymph nodes with capsule and lymphoid tissue in the center and darkly stained material on both sides with calcification at the periphery are shown (Figure 4). The patient's post-operative period was unremarkable. Follow up until late 1998 showed significant improvement in

his abdominal pain, but no more change in his calcified masses.

Discussion. Dystrophic calcification of lymph nodes may occur in any abdominal nodal chain, but by far the most common are mesenteric lymph nodes. Calcification of these nodes represents the effect of previous infection, in nearly every instance caused by mycobacteria,³ occasionally histoplasmosis or Paracoccidioidomycosis,⁴ and rarely in other chronic granulomatous infection. Previously, when intestinal tuberculosis was common, involvement of mesenteric lymph nodes was nearly universal. Calcified lymph nodes differ greatly in size. A few may reach 7 cm in their longest axis, but usually they vary from 1-3 cm in diameter.⁵ With the elimination of bovine tuberculosis as a clinical problem in most developed countries, the incidence of lymph node calcification has decreased. Yet, calcified lymph nodes are still recognised on plain film of the abdomen in patients with no history of intestinal disease.⁶ Both animal and human studies have revealed that bacteria can pass through epithelial cells in the intestinal wall and cause no residual damage.⁷ Almost all patients with calcified mesenteric lymph nodes have had a pulmonary tuberculous infection.⁸ Some may have residual evidence of disease in the lungs but chest x-ray will often not reveal changes of tuberculosis, especially when the initial infection occurred early in childhood. Moreover, not everyone with calcified mesenteric lymph nodes will be a positive reactor to tuberculin. It is well recognised that a response to tuberculin will diminish with time.

In adults, only a few conditions other than tuberculosis produce areas of calcification widely scattered throughout the abdomen. Hydatid cyst, presumably forming through rupture of a primary hepatic cyst into the peritoneal cavity may also calcify. Multiple small phleboliths may sometimes be widely distributed throughout the areas of the abdomen in hemangiomas, which involves the mesentery, intestine or omentum.⁹ Calcified cyst of the mesentery or peritoneum, especially chylous cyst, may show unilocular or multilocular calcification. Human Pentastomiasis may present as abdominal calcifications after many years of infestations caused by *Armillifer grandis*, in patients who gave a history of eating poorly cooked snakes or their handling.¹⁰ Widespread annular or plaque-like deposits simulating pseudomyxoma peritonei occur as a late effect of instillation of liquid petroleum into the peritoneal cavity, a procedure once used surgically for the alleged purpose of preventing adhesions. Calcified oval nodules of fat are frequently found free in the peritoneal cavity at laparotomy and are thought to originate as calcified epiploic appendages

that have undergone torsion and necrosis and became detached from the colon. Multiple calcified nodules may also be due to fat deposits in the greater omentum. More extensive calcification may occur in mesenteric lipomas. The most common cause of calcified mesenteric lymphadenitis in the eastern world is tuberculosis, but the tuberculous lymphadenitis, which almost disappeared from the clinical practice, has started reappearing again, due to the increasing number of immunosuppressive diseases. The typical finding is a calcified lymph node seen in radiographs.¹¹ These patients are usually asymptomatic but might suffer from abdominal pain due to adhesions. The appearance of tubercular lymph node calcification may be variable, but nearly always they exhibit the morphological features of a solid mass. We did an auramine rhodamine stain for the calcified pericolic necrotic nodules to exclude the possibility of mycobacterial etiology. The auramine rhodamine stain was negative. No parasitic organism or granulomatous lesion was seen in any of the calcified lymph node biopsies. Due to the presence of widespread calcified mesenteric nodes with adhesions, calcified nodes on the serosal surface of the appendix, liver and spleen, it was suggested that the most probable cause of these calcifications is an episode of previous tubercular peritonitis, but at this stage, when the lymph nodes are converted into hard calcified stone

like masses, its almost impossible to confirm the pathogenesis of these calcifications.

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