were not known tuberculous patients. The incidence among patients with known tuberculosis ranges from 1.5% to 30%[3]. Primary tuberculous appendicitis with no detectable focus elsewhere is uncommon, although a number of cases has been reported[1]. It has been suggested that the most likely mode of infection in such cases is ingestion of food such as cheese, butter or milk which may be contaminated with tubercle bacilli[4].

Clinically 3 types of tuberculous appendicitis have been described[5]: (1) Chronic disease with low grade pain, occasional vomiting and diarrhoea and findings of tenderness, guarding of muscles and a mass in the right iliac fossa. (2) Acute disease indistinguishable from pyogenic appendicitis until histology is performed. (3) Latent type discovered incidentally where the organ is unchanged macroscopically[6].

The present case appears to be an acute exacerbation of a chronic tuberculous appendicitis.

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Meckel's Diverticulum in Adults

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This is a study of Meckel's diverticulum in adults who had undergone surgery in the hospital. The complications of Meckel's diverticulum are compared with that of the ones mentioned in the literature. A comparative study of the clinical features and the operative findings in case of Meckel's diverticulum with ectopic tissue is also discussed. The controversy of Meckel's diverticulectomy has also been dealt with at large.

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THE management of Meckel's diverticulum incidentally detected in adults remains controversial. Hildanus in 1598 discovered the partial persistence of omphalomesenteric duct[1] and described it as an unusual diverticulum of the small intestine. In 1809, Johann Friedrich Meckel[2], presented the first embryological and pathological description of ileal diverticulum which now bears his name.

Meckel's diverticulum is the commonest congenital anomaly of small intestine[3]. It is a true diverticulum cotaining all layers of the gut wall, and is usually found on the antimesenteric border about 50 cm proximal to the ileocaecal valve. Such diverticulae contain ectopic tissue, most often gastric mucosa. The incidence of Meckel's diverticulum in general population has been assessed from large autopsy series as 0.6% to 2.3%[4]. The most widely accepted figure, according to literature is around 2%.

The possibility of the presence of ectopic tissue in Meckel's diverticulum has been known since Salzer[5]. The age and sex of the patient, characteristic of the diverticulum and presence or absence of ectopic tissue are the main determining factors of prognosis. Herein the main risk factors in diverticular disease are evaluated emphasising the presence of ectopic tissue as an important factor in the complication of Meckel's diverticulum.

MATERIAL AND METHOD

Between 1970 and 1987, 32 patients with Meckel's diverticulum were operated on at the department of surgical gastroenterology, Little Flower Hospital, Angamally, Kerala. Their mean age was 40 years, with the range of 16 to 64 years.

Twenty-one patients were operated on as an emergency procedure for abdominal pain and all of them had complicated Meckel's diverticulum. They were removed by segmental ileal resection so as not to leave behind any ectopic tissue. Diverticulectomy was the procedure of choice in the asymptomatic patients where Meckel's diverticulum was noticed on laparotomy for appendicectomy. In one case of adenocarcinoma of the rectum opened for anterior resection, the Meckel's diverticulum was found to be adherent to the serosa of the rectum, and hence had to be removed by ileal resection along with the carcinomatous growth. The patients were divided into 2 groups. Those in group 1 had diverticulae without ectopic tissue, and those in group 2 had diverticulae with ectopic tissue.

RESULTS

Clinical signs in patients with symptomatic Meckel's diverticulum were non-specific. Pre-operative diagnosis was correct only in 5 patients and consisted of haemor-

rhagic diverticulum in 2 patients, perforated diverticulum in 2 and intussusception in one. Of the remaining 27 patients, 11 were asymptomatic and were detected only on laparotomy. The other 16 patients were mistakenly diagnosed as having intestinal obstruction in 5, acute appendicitis in 9 and peritonitis in 2.

The postoperative period was uneventful for 31 patients with hospital stay ranging from 10 to 14 days. Only one patient had wound infection and had to stay for 21 days. Histopathological studies revealed diverticulitis in 9 patients with ectopic tissue in 8 patients of which 4 had gastric mucosa, 2 had pancreatic tissue and the remaining 2 had both gastric and pancreatic tissue. Patients presenting with ectopic tissue (group 2) were clinically and postoperatively different from the non-ectopic growth (group 1). Patients in group 1 had no previous signs of abnormality and consequently had not been previously treated. The initial clinical presentation were similar in both the groups, except for the intestinal haemorrhage that occurred in 2 patients in group 2.

The operative findings in the symptomatic group were as follows: Nine had diverticulitis, 5 had intestinal obstruction, 3 had intussusception, 2 had perforation and 2 had haemorrhage. In the symptomatic group the male: female ratio was 1.7 : 1 whereas in the asymptomatic group the ratio was 1.2:1. The commonest complication of Meckel's diverticulum was diverticulitis. Out of the 2 perforations one was caused by ectopic mucosa and the other was by inflammation. In patients with gastro-intestinal bleeding, the symptoms were of chronic blood loss with anaemia. There was no neoplasm of the diverticulum in this study.

Discussion

The management of incidentally discovered Meckel's diverticulum has been much debated. The author of Scottish report[6] dealing with surgeons' views on the subject concluded that no guideline could be given to the junior surgeon that could be acceptable to the senior surgeon. It was suggested that in patients older than 40 years, incidentally detected non-adherent Meckel's diverticulum should be left alone[7].

Meckel's diverticulum may give rise to inflammation, intestinal obstruction, intussusception, ulceration, perforation, peritonitis and neoplasm. Meckel himself estimated the risk of complications developing in diverticulum to be 25%. This figure is now considered as too high [8].

Published figures of complication rate in the management of symptomless Meckel's diverticulum ranges from 15-33%[9]. Some factors increase the risk of complication. The predominance of males among patients with symptom-producing Meckel's diverticulum has been noted in several other studies[10]. Presence of ectopic tissue in diverticulum is found to increase the incidence of complications. This tissue is present in 9 to 60% of the diverticulae,

depending on the thoroughness of examination. Ectopic tissue may be present in spite of normally palpable Meckel's diverticulum, but if the diverticulum is normal on palpation the risk of complication should be minimal.

Bleeding usually is associated with ectopic tissue in diverticular sac[11]. Both the patients with haemorrhage had ectopic tissue. The most common complication of Meckel's diverticulum in adults is intestinal obstruction of various types[12]. But in this study, with a small number of cases, inflammation was found in a greater number of patients.

This study showed that there is an increased risk of complications in Meckel's diverticulum whether there are signs of ectopic tissue or not and it is advisable to remove all Meckel's diverticulum found at laparotomy if minimal signs of inflammation are present.

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