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### PANCREATIC PSEUDOCYST CAUSED BY *SALMONELLA TYPHIMURIUM*

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**Abstract:** Localized Salmonella infection of the pancreas is usually the result of salmonella bacteraemia caused by *Salmonella choleraesuis* but may also occur after gastroenteritis by *S. enterica subsp. enterica ser. Typhimurium* and enteric fever by *S. enterica subsp. enterica ser. Typhi*. We report a case of a 50 year old patient who presented with fever and abdominal pain. On CECT abdomen a multiloculated cyst replacing large part of pancreas was seen. The purulent fluid drained, showed the growth of *S. enterica subsp. enterica ser. Typhimurium*. The isolate was sensitive to chloramphenicol, ampicillin, ciprofloxacin, co-trimoxazole, ceftriaxone. There have been few published reports of localized pancreatic involvement with Salmonella spp. For diagnosis of cystic abdominal masses a careful history taking, physical examination and evaluation of clinical parameters as well as radiological images are indispensable.

**Keywords:** Pancreatic pseudocyst, Salmonella, CECT



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## INTRODUCTION

Salmonella infection occurs in five different clinical forms: gastroenteritis, enteric fever, bacteraemia, chronic carrier state and localization at one or more sites. Localization in the pancreas is rarely seen and when it does has mostly required surgical intervention. Localized Salmonella infection of the pancreas is usually the result of salmonella bacteraemia caused by *Salmonella choleraesuis* but may also occur after gastroenteritis by *S. enterica subsp. enterica ser. Typhimurium* and enteric fever by *S. enterica subsp. enterica ser. Typhi*<sup>[1]</sup>. Once pancreatitis occurs it is likely to form a pancreatic abscess. The route of infection in pancreatic abscess has not been clearly demonstrated. Possible pathways may be infected bile reaching the pancreas by the pancreatic duct, haematogenous spread from a distant site and lymphatic spread from the intestinal tract.<sup>[2]</sup> There are few reports, of isolated infection of the pancreas with *Salmonella enterica subsp. enterica ser. Typhimurium*, available in the literature. In fact, none of such case had been reported from India. We report a case of *S. enterica subsp. enterica ser. Typhimurium* pancreatitis progressing to pseudocyst formation in a 50 year male patient.

## CASE REPORT:

A 50 year old nondiabetic, non-hypertensive male patient was admitted with chief complaints of pain abdomen and fever for the last 6 months. He has a history of alcohol abuse for the last 25 years. Pain abdomen was present in the upper part of abdomen, non-radiating, associated with food intake. Fever was intermittent and was not relieved with medication. The patient got admitted in a private nursing home and was managed conservatively prior to his admission in our institute

On examination per abdomen, the epigastrium was tender and a firm lump was palpable in epigastric region. Laboratory investigations of the patients revealed the following results: haemoglobin - 12.2 g/dl, total leucocyte count – 14,600/mm<sup>3</sup>, platelets – 1,29,000/ $\mu$ l, glucose – 123mg/dl, serum urea-38mg/dl, serum creatinine-1.38mg/dl, serum total bilirubin-1.1mg/dl, SGOT-18U/l, SGPT-12U/l, ALP-143U/l, total protein-6.5g/dl, albumin- 3.7g/dl, PTI(INR)- 12.6(1.15), serum sodium-137 mEq/l, serum potassium-3.9 mEq/l, serum chloride-99mEq/l and PTH-274.4 pg/ml and procalcitonin- 0.12ng/ml.

On CECT abdomen, a large thick walled multiloculated cyst measuring 19.0 x 7.0 cm in size, replacing large part of pancreas with surrounding inflammatory changes was seen. On the basis of clinical, radiological and laboratory investigation, the patient was posted for surgery. Intra-operatively 500 ml of purulent fluid was drained out of the large cyst.

The pus was sent for bacterial culture and sensitivity. Growth of non-lactose –fermenting organisms were obtained on MacConkey, s agar, which on the basis of gram staining, motility,

biochemical reactions and agglutination with specific antisera was identified as *S. enterica subsp. enterica ser. Typhimurium*. The isolate was sensitive to chloramphenicol, ampicillin, ciprofloxacin, co-trimoxazole, ceftriaxone.

Patient was ambulatory, accepting orally, passing stools & flatus normally, self-voiding and afebrile at the time of discharge.

## DISCUSSION

For diagnosis of cystic abdominal masses a careful history taking, physical examination, and evaluation of clinical parameters as well as radiological images are indispensable.<sup>[3]</sup> In view of clinical febrile course and the radiological features in our patient, a diagnosis of abdominal inflammatory pseudocyst with abscess formation was made. The clinical manifestations in this patient were exceptional for salmonella infection, even in an endemic area like India, however culture of the drained pus from the pseudocyst confirmed the etiological agent as *S. enterica subsp. enterica ser. Typhimurium*.

There have been few published reports of localized pancreatic involvement with Salmonella spp. Kune and Coster reported a case of pancreatic abscess due to *S. enterica subsp. enterica ser. Typhi* who had gallstones; *S. enterica subsp. enterica ser. Typhi* was isolated from the necrotic pancreatic tissue and gallstones.<sup>[4]</sup> Russell et al. have reported acute pancreatitis as a complication of typhoid fever.<sup>[5]</sup> Two cases of chronic pancreatitis by *S. enterica subsp. enterica ser. Typhi* were reported by Koshi, one of these required distal pancreatectomy and the other required only drainage of a pseudocyst.<sup>[6]</sup> Four cases of pancreatitis due to *S. enterica subsp. enterica ser. Typhi* has been reported by Hermans et al.<sup>[7]</sup> Garg and Prashar has also reported a case of *S. enterica subsp. enterica ser. Typhi* pancreatitis progressing to abscess which was managed conservatively.<sup>[8]</sup> Another case of pancreatic abscess due to *S. enterica subsp. enterica ser. Typhi* in a 40-year-old male patient has been reported by Arya and Arya. The patient was managed by percutaneous needle aspiration and antibiotic therapy.<sup>[9]</sup>

The first case of pancreatic abscess due to *S. enterica subsp. enterica ser. Typhimurium* was reported by Strand and Sanders. This case had associated gallstones and chronic cholecystitis but culture of gall bladder wall, bile and gallstones showed no growth.<sup>[2]</sup> Cohen et al. have also reported a similar case but without associated gall bladder involvement.<sup>[1]</sup>

Direct pancreatic colonisation of bacteria could stumble on by haematogenous route, transmural migration, lymphatic route, via the biliary duct system and from the duodenum via the main pancreatic duct and particularly in patients with predisposing conditions such as biliary stasis due to cholelithiasis, choledocholithiasis, and biliary duct abnormalities.<sup>[10]</sup> But our patient was devoid of such vulnerable conditions in that way. *S. enterica subsp. enterica ser.*

*Typhimurium* may lead to Salmonella bacteremia which may follow localized Salmonella infection. Pancreatic abscess and rarely pseudo pancreatic cyst develop after acute pancreatitis, however the route by which organisms lodge into pancreas could not be ascertained. With prompt surgical drainage and adequate antibiotics coverage patient was discharged in a satisfactory condition.

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