

## Case Report

## Mesenteric Panniculitis in A Patient with Dengue Fever

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*Mesenteric panniculitis or sclerosing panniculitis is a chronic nonspecific inflammation of mesentery adipose tissue of small intestine and colon. It can also rarely involve retroperitoneal, pelvic and peripancreatic fat. No specific etiology has been found behind this rare disease. It is most commonly associated with abdominal surgery, autoimmune disease and malignancy. Here we present a case of a middle-aged man with history of abdominal surgery and he was presented to us with dengue fever. His hospital course was complicated with sudden, severe abdominal pain with clinical features of subacute intestinal obstruction, and mesenteric panniculitis was diagnosed during further evaluation. It was a great challenge for us not only to diagnose such a disease of rare spectrum, but also to manage this patient who was already suffering from another agonizing disease, dengue fever.*

**Keywords:** Mesenteric panniculitis, Dengue fever, Subacute intestinal obstruction.

**Case:**

A 52 years old non diabetic, normotensive man presented with fever, generalized body ache for 6 days and mild upper abdominal discomfort for 3 days. He underwent cholecystectomy and appendicectomy 15 and 12 years back respectively. He also suffered from subacute intestinal obstruction 6 years ago, which was managed conservatively, and no underlying etiology was found at that time. Dengue NS1 test was positive 3 days prior to admission. On admission, his vitals were stable, all systemic examination, including abdomen was normal. His haemoglobin was 12.9gm/dl, HCT 38.9%, TLC  $27.8 \times 10^3 \mu\text{L}$ , neutrophil 21.4 % lymphocytes 61.3%, platelet count  $28 \times 10^3 \mu\text{L}$ , ESR 88 mm in 1<sup>st</sup> hr. LFT showed transaminitis (S. bilirubin 0.60 mg/dl, ALT 95 U/L, AST 102 U/L, alkaline phosphatase 112 U/L). S. electrolytes and renal function tests were normal. Further workup was made to evaluate leukocytosis, and CRP was 21 mg/dl, procalcitonin was 0.05 ng/ml, and urine for routine microscopic examination was unremarkable. Blood and urine CS had no growth. Chest x-ray was satisfactory.

However, 6 hours after admission, patient developed sudden severe cramping constant abdominal pain. Clinical features were suggestive of subacute intestinal obstruction. Plain x-ray abdomen showed multiple air fluid levels.

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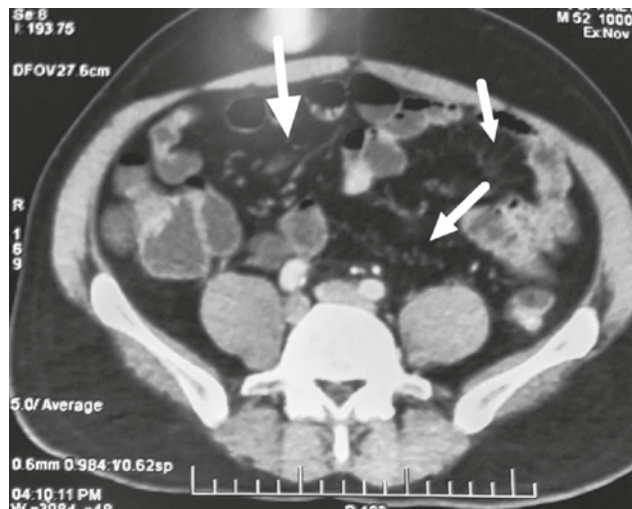
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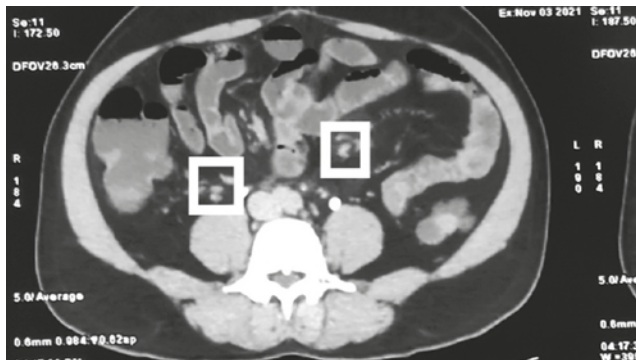


**Fig 1:** Plain x-ray abdomen in erect posture shows multiple air fluid levels (white arrow) and fecal matter (black arrow)

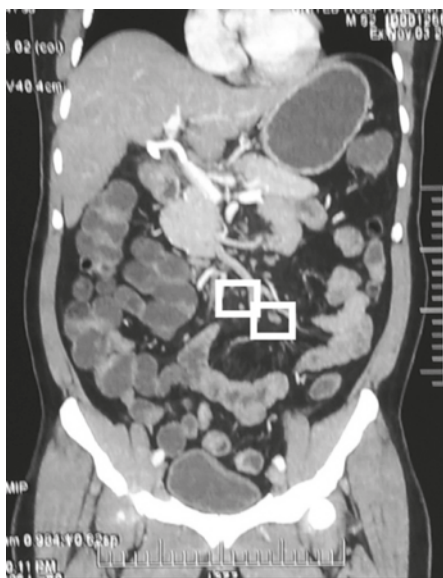
CT scan abdomen with contrast revealed dissection in coeliac trunk and hepatic artery, and diffuse mesenteric fat stranding with surrounding small lymph nodes in mid part of abdomen encasing superior mesenteric vessels, suggesting mesenteric panniculitis.



**Fig 2:** Contrast-enhanced CT scan shows inhomogeneous fatty mass (arrows) displaying higher attenuation than normal retroperitoneal fat



(a)

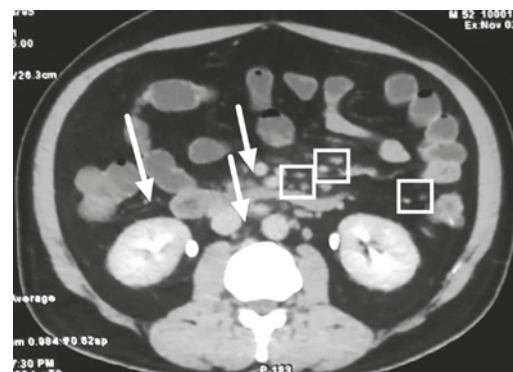


(b)

**Fig 3:** Contrast-enhanced CT scan (a) axial plane, (b) coronal plane, show fat ring sign or halo sign: preservation of fat around the mesenteric vessels and around soft tissue nodules on the background of diffuse fat stranding



**Fig 4:** Contrast-enhanced CT scan shows misty mesentery; increased attenuation of mesenteric fat owing to infiltration by inflammatory cells, fluid (edema, lymph, or blood), fibrosis



(a)



(b)

**Fig 5:** Contrast-enhanced CT scan, (a) axial planes, (b) coronal plane, show misty mesentery (arrows) and fat ring sign or halo sign (blocks)

ANA, dsDNA, cANCA and pANCA were negative. Tissue biopsy could not be done, since patient's platelet count was lower than  $30 \times 10^3 \mu\text{L}$  due to dengue fever by the time diagnosis was made. CT angiogram was planned to rule out any vascular anomaly however it was not possible as patient denied.

The patient was managed conservatively with systemic corticosteroid, Inj. Hydrocortisone 100mg, IV 8 hourly. NSAIDs (for pain management) were avoided due to dengue fever. For dissection of celiac trunk and hepatic artery no surgical intervention was required. From 2<sup>nd</sup> day of administration of systemic corticosteroid, the patient's symptoms started to improve. On 5<sup>th</sup> day of administration of systemic corticosteroid, patient was discharged after impressive clinical improvement, and his haemoglobin was 12.3gm/dl, HCT 36.5%, TLC  $8.7 \times 10^3 \mu\text{L}$ , neutrophil 62.6 % lymphocytes 28.7 %, platelet count  $261 \times 10^3 \mu\text{L}$ , ESR 21 mm in 1st hour, and CRP was 3 mg/dl.

### Discussion

Mesenteric panniculitis is a rare benign nonspecific inflammation of adipose tissue of intestinal mesentery. In 90% cases it involves mesentery of small intestine<sup>2</sup>. Mesenteric panniculitis can occur independently, or can be associated with a variety of other health conditions, such as mesenteric thrombus, mesenteric arteriopathy, abdominal aortic aneurysm, chemical or thermal injury, vasculitis, autoimmune disorder, malignancies, gall stone, pancreatitis, chylous ascites, hypersensitivity reactions, bacterial infection and abdominal trauma or surgery<sup>2,3</sup>. Emory et al. reported a series in which 84% of patients had a history of abdominal trauma or surgery in their case<sup>4</sup>.

There are three stages of inflammation in mesenteric panniculitis<sup>4</sup>. In first stage a layer of foamy macrophages replace abdominal fat, causing mesenteric lipodystrophy. Acute inflammatory signs are minimal or non-existent. Patients are generally asymptomatic, and in this stage prognosis is good. In second stage, mesentery is further infiltrated by plasma cells and a few polymorphonuclear leukocytes, foreign-body giant cells, and foamy macrophages. Patient may suffer from fever, abdominal pain, and malaise resulting in mesenteric panniculitis. In final stage, retractile mesenteritis occurs by collagen deposition, fibrosis and inflammation. Collagen deposition leads to scarring and retraction of the mesentery which in turn, leads to the formation of abdominal masses. At this stage, obstructive symptoms may come out. On average duration these stages are 6 weeks. But it can vary from 2 weeks to 16 years<sup>5</sup>. In most cases patients are asymptomatic and mesenteric panniculitis can be incidental. If symptomatic, patients may present with fever, abdominal pain or discomfort, anorexia, nausea or even weight loss<sup>6</sup>. Occasionally there could be single or multiple palpable masses, rectal bleeding, jaundice, gastric outlet obstruction, and even acute abdomen. Malignancy, (lymphoma, lymphosarcoma, retroperitoneal sarcoma, peritoneal mesothelioma), infectious disease (tuberculosis, histoplasmosis), carcinoid tumor are differentials for mesenteric lymphoma<sup>3</sup>.

The CT scan findings can vary based on the severity of inflammation and fibrosis<sup>3</sup>. There can be inhomogenous mesenteric fat with higher attenuation than adjacent retroperitoneal or meso-colonic fat, and diffuse mesenteric fat stranding surrounding small lymph nodes. Fat ring sign/ Halo ring sign is another distinguish feature in mesenteric panniculitis, where there is preservation of fat around the mesenteric vessels and around soft tissue nodules on the background of diffuse fat stranding, and this feature helps to differentiate from other mesenteric processes such as lymphoma, carcinoid tumor, or carcinomatosis, where there will be no fat ring sign. Another very important sign for mesenteric panniculitis is misty mesentery sign, where there is increased attenuation of mesenteric fat owing to infiltration by inflammatory cells, fluid (edema, lymph, or blood), and fibrosis. It is noteworthy, in our case, all of the features were present in CT abdomen. Other features in CT abdomen are fibrotic or inflammatory soft tissue mass with adenopathy occasionally encasing vessels with thrombosis, calcifications due to adipose tissue necrosis, pseudocapsule, and so on<sup>7,8</sup>.

Biopsy (through laparoscopy or laparotomy) is the gold standard to diagnose. One or more than one of the three major pathological features: fibrosis, chronic inflammation, or fatty infiltration of the mesentery is found<sup>2,9</sup>. To some extent, all three components are present in most cases. These three components can be found in various proportions. If fibrosis is dominant, it is called retractile mesenteritis; if mesenteric inflammation is dominant, it is called mesenteric panniculitis<sup>2,10</sup>. However, biopsy is not always necessary for diagnosis, and typical cases can be directly diagnosed without pathological biopsy<sup>8</sup>. Recently mesenteric panniculitis has been diagnosed using CT features of the disease<sup>3,8</sup>.

Mesenteric panniculitis can be resolved spontaneously with a good prognosis<sup>2,8</sup>; hence observation is advised for asymptomatic patients. In symptomatic cases, patients can be managed by immune-suppression by steroids and steroid sparing agents (cyclophosphamide, azathioprine)<sup>1,2,8</sup>, hormonal therapy (progesterone, tamoxifen)<sup>1-3</sup>, colchicine<sup>1,2,8</sup>, or even by radiotherapy<sup>1,3</sup>. If medical therapy fails or life-threatening complications, e.g. intestinal obstruction or intestinal perforation arise, surgical approach is attempted<sup>1,3</sup>. In our case, the patient had an excellent response to systemic corticosteroid.

### Conclusion

Dengue fever can rarely cause vasculitis, which is mostly small to medium vessel vasculitis; and dengue-associated vasculitis is a "vasculitis associated with probable etiology" as per the 2012 Revised International Chapel Hill Consensus Conference Nomenclature of Vasculitides<sup>11</sup>. Vasculitis associated with dengue fever usually involves CNS, causing ischaemic stroke. Periorbital neuritis, retinopathy, and cutaneous vasculitis have also been reported<sup>11</sup>. However, no single case has been reported on dengue fever and mesenteric panniculitis. In our patient, history of abdominal surgery could be the precipitating factor. Nevertheless, our unique case has made us to bethink the diverse manifestations of dengue fever and unfolded new horizon of great thought.

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