

Acute small bowel mesenteric ischemia(non occlusive) in a chronic kidney disease patient on hemodialysis-a case report

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I. Introduction

Non occlusive mesenteric ischemia(NOMI) is a condition with high rate of mortality. NOMI is a syndrome in which there is decreased blood flow through the mesenteric circulation there by leading to bowel ischemia and eventually gangrene. Chronic kidney disease patients who require dialysis are at particularly higher risk than the rest of the population. High index of suspicion in dialysis patients and aggressive intervention is vital in their survival.

II. Case

A 47 year old man, known case of Chronic kidney disease for last four years with hypertension, on maintenance hemodialysis developed pain abdomen with few episodes of vomiting post dialysis . Pulse was 90 per minute and blood pressure was 180/90 mmHg. Chest and CVS examination were normal. Complete hemogram showed Hb 9.6g/dl with mild leukocytosis (TLC 11500/mic l). Serum creatinine was 8.0 mg/dl prior to dialysis, serum sodium 145mEq/l and potassium 5.5 mEq/l. Serum albumin was 2.5g/dl. Urinalysis showed microscopic hematuria and proteinuria. Per abdomen there was mild distension and diffuse tenderness. Bowel sounds were present. Patient was kept nil per oral, intravenous fluids were started and was put on intravenous antibiotics empirically. Upper GI endoscopy was done that showed features of acute gastritis(Fig 2). Patient's condition did not improve. Over the period of two days the abdominal distension increased(abdominal girth increased from 73cm to 86cm). Tenderness over the abdomen increased and signs of peritonitis started to develop with absent bowel sounds on auscultation. Nasogastric tube was placed and repeat CBC showed marked leucocytosis with neutrophilia. Abdominal X-ray was done which showed multiple air fluid levels. Subsequently CT scan of abdomen was done which revealed small bowel distension with ascites(Fig 1).

On clinical judgement, exploratory laparotomy was done which revealed dilated small bowel and moderate ascites and a segment of jejunum approximately 40-45cm from duodenojejunal flexure with ischemic patches over it. There was no obvious cause for obstruction seen. The affected segment had some peristalsis. The bowel segment was subjected to application of hot mops and high flow of oxygen was started intraoperatively. After multiple attempts, the colour and the peristalsis of the affected gut segment returned to near normal. No resection was done. Two wide intra-peritoneal drains were kept and abdomen was closed back. But for drainage of ascites, post operative period was otherwise uneventful.

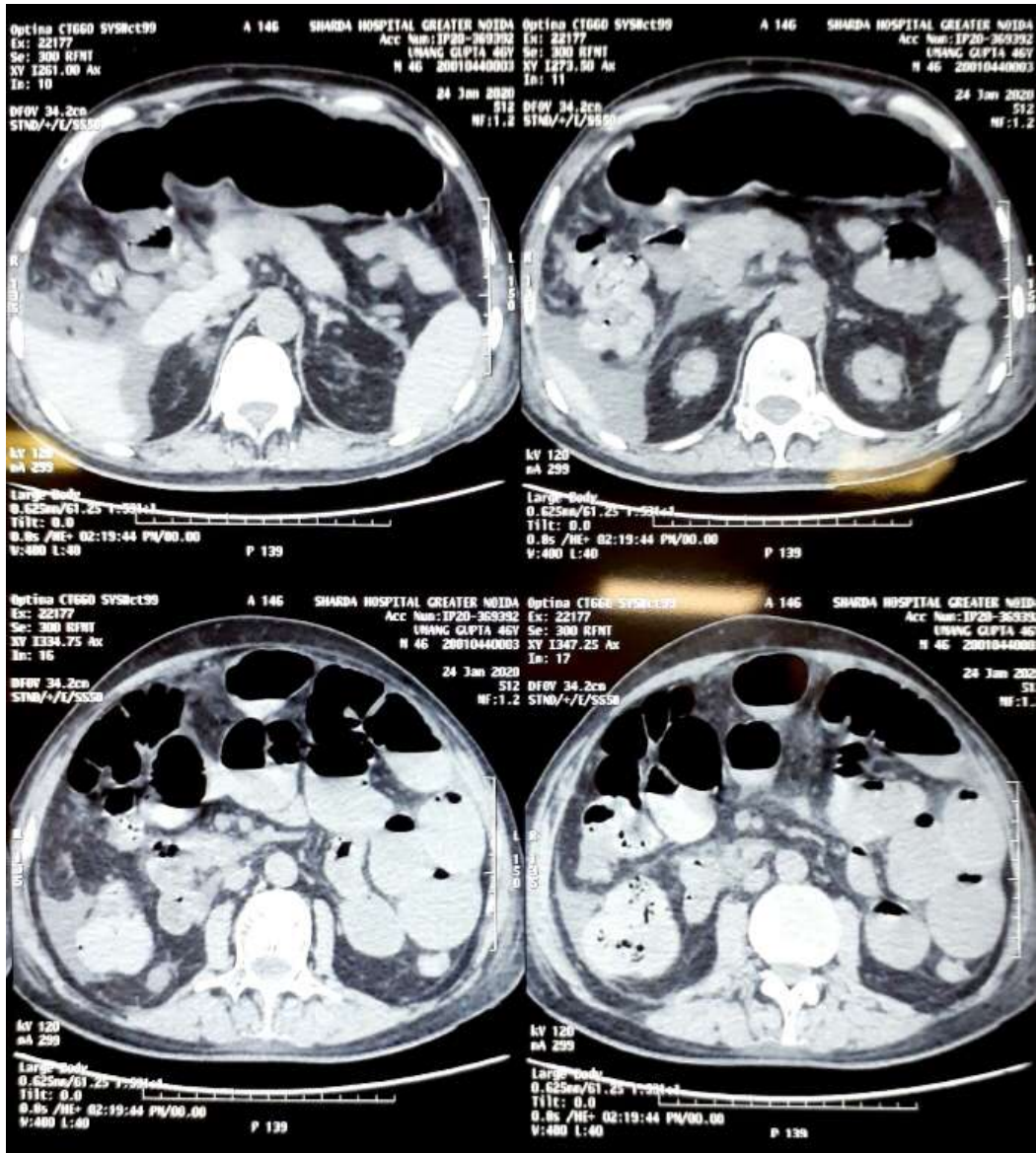


Fig 1: CT abdomen showing distended small bowel and ascites



Fig 2: Gatro-Duodenoscopy showing features of gastritis

III. Discussion

NOMI is a condition of decreased mesenteric blood flow due to contraction of otherwise normal vessel lumen. This arterial spasm may be elicited by a combination of pharmacotherapy, stress response to sepsis, myocardial dysfunction, or shock. Impediment of blood flow can precipitate ischemia and thrombosis. Often this process is insidious and progressive.

NOMI, in recent years, has been recognized as life threatening complication in dialysis patients(1). The mortality rate is very high and there exist poor prognostic factors. The estimated incidence of mesenteric ischemia in this group is in the range of 0.3-1.9% per patient/year as compared to 0.2% value for general population(2). The susceptibility of dialysis patients to NOMI is explained by the common known risk factors in this group i.e, generalized atherosclerosis, diabetes mellitus, congestive heart failure, advanced age, long standing hypertension, use of mesenteric vasoconstrictor drugs(3,4). Additionally, in end stage renal disease patients, use of recombinant human erythropoietin plays a role. Recent studies demonstrated that erythropoietin has a direct vasopressor effect on small mesenteric resistance vessels.(5). Hypoalbuminemia has also been considered as a risk factor.

Severe hypotension during hemodialysis precipitates secondary mesenteric arterial spasm, thereby leading to severe reduction in mesenteric perfusion and subsequent ischemia(6).

The clinical picture in NOMI is variable, depending on the length of bowel involved, the rapidity of onset and intrinsic bowel wall resistance to ischemia. The diagnosis may thus be difficult and requires high index of suspicion(7). The subacute presentation as repeated episodes of pain is related to poorer prognosis due to longer course and thus more disseminated ischemic lesions and/ or necrosis of whole intestinal wall, even with perforation and peritonitis. This holds true with delayed intervention as well. It is thus essential to suspect the pathology earlier.

Most common symptom is abdominal pain, which usually begins 8-12 hours after dialysis, although it may develop during the hemodialysis session(6,8). In the absence of pain, unexplained abdominal distension and hematochezia may be the earliest signs of ischemia and impending intestinal infarction. Fever, vomiting, diarrhea and ileus may be present, but are non specific. Abdominal signs such as diffuse/localized tenderness, rebound tenderness or rigidity are ominous signs and suggest bowel infarction and peritonitis.

Laboratory investigations are non specific in detecting NOMI. Leucocytosis is the most frequent finding(6,8,9). Serum lactate levels may be useful in suggesting mesenteric ischemia(7). Positive fecal occult blood may be seen in certain cases. Plain x-ray of abdomen is non specific and may show dilated bowel loops. In bowel perforation, free air may be seen as pneumoperitoneum. Careful use of colonoscopy may be helpful in identifying bowel ischemia(10). However air insufflation may cause overpressure and subsequent perforation(11). Abdominal ultrasound does not provide additional information. Abdominal CT is not diagnostic by itself, but may show some changes suggestive of mesenteric ischemia such as bowel wall thickening and distension of bowel loops.

CT angiography can confirm the diagnosis of NOMI(7). Angiography should be performed at an early stage in patients suspected of mesenteric ischemia. Angiography has a therapeutic role as well and can be used to administer vasodilator drugs(7).

Mesenteric ischemia is usually managed surgically(2,6,8). Early surgical intervention is associated with better survival(6,7,8). The main cause of death in post operative period is extensive bowel ischemia and/or necrosis and septic shock(8).

IV. Conclusion

NOMI though uncommon, is potentially fatal complication in hemodialysis patients, and most of those presenting it have known cardiovascular disease that may act as a predisposing factor. The diagnosis of NOMI should be strongly considered in every hemodialysis patient with abdominal pain particularly right lower quadrant and there has been a previous episode of arterial hypotension. Identification of patients at high risk for NOMI and close monitoring of filtration rate together with early intervention may impact on the high mortality of this disease.

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