

## Abstract

Various causes of Recurrent Acute pancreatitis have been identified in the past. This report presents a novel case of "recurrent" acute pancreatitis in the setting of superior mesenteric artery syndrome (SMAS) characterized by rapid and severe weight loss. Thus, highlighting SMAS as a rare yet possible cause of recurrent pancreatitis facilitating early diagnosis and prompt treatment.

## Introduction

- Superior mesenteric artery syndrome (SMAS) is compression of the third part of the duodenum between the aorta posteriorly and the superior mesenteric artery (SMA) anteriorly. SMA arises from the aorta forming an aortomesenteric angle, normally 45–60°, while the third part of duodenum passes between the aorta and SMA.<sup>1</sup>
- Congenital or acquired factors such as excessive weight loss due to an eating disorder, cachexia, malignancy, acquired immunodeficiency syndrome, large extensive burns, polytrauma or any surgical manipulation.<sup>2</sup>

## Case Report

A 45-year-old man presented to the hospital with a 24-hour history of worsening upper abdominal, epigastric tenderness, bilateral flank pain and nausea without emesis. Medical history was non-contributory.

He was hemodynamically stable with a recent unintentional weight loss of 35lbs. Physical examination was significant for Laboratory data demonstrating unremarkable urinalysis, normal kidney, and liver function but elevated lipase 1552 (73-393U/L) suggesting pancreatic inflammation.

Computer tomography (CT) contrast of the abdomen and pelvis, showed inflammation in the tail of the pancreas without necrosis (Figure 1). In addition, dilation of the second and third portion of the duodenum with an abrupt change in caliber (Figure 2) along with a narrow aortomesenteric angle of 18° (Figure 3) was observed. CT images demonstrated findings consistent with acute pancreatitis with peripancreatic edema (Figure 1a) in the setting of SMAS (Figure 1b) with no evidence of discrete mass, pseudocysts or congenital abnormality such as pancreatic divisum. Based on the patient's clinical presentation, laboratory and radiographic findings, he was diagnosed with SMAS-associated acute pancreatitis.

Patient was readmitted two months later with a similar presentation. CT of the abdomen and pelvis suggested acute pancreatitis. During the recurrent episode, he was again conservatively treated with gradual weight gain and subsequent recovery.

## Results

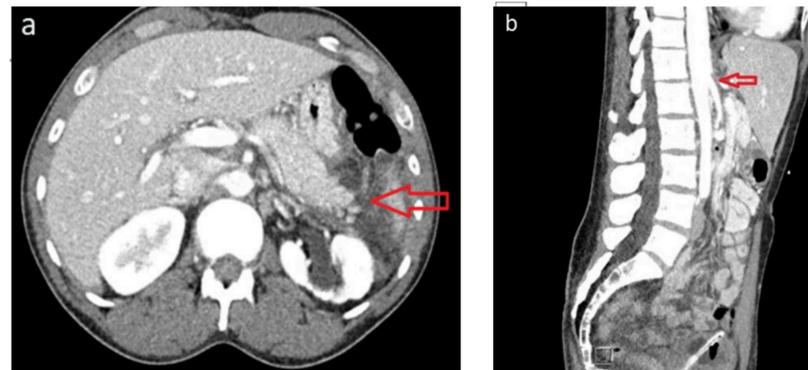


Fig 1. Contrast-enhanced CT images on initial presentation demonstrating findings consistent with acute pancreatitis with peripancreatic edema (a) in the setting of SMAS (b).

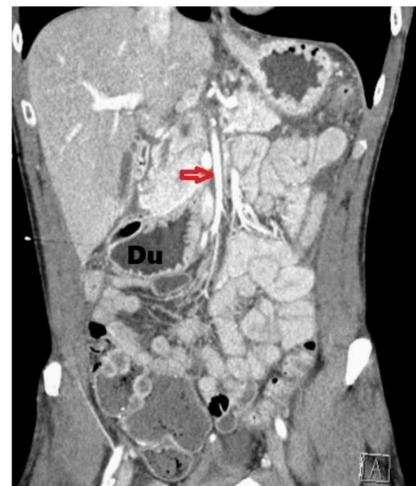


Fig 2. Contrast-enhanced coronal CT image showing distension of the duodenum (Du) with its abrupt narrowing as it passes under SMA (arrow).



Fig 3. Contrast-enhanced sagittal CT (left) and volume-rendered 3-dimensional CT (right) showing a narrow aortomesenteric angle of 18° (arrow).

## Discussion

- In this report, recent excessive and rapid weight loss resulted in a loss of retroperitoneal fat causing a decrease in aortomesenteric angle, leading to the duodenal compression. Other known possible causes of GI obstruction<sup>1</sup> such as duodenal ileus and gastroparesis, were ruled out.
- The exact mechanism of pancreatitis in SMAS is still unknown. It is proposed that the secondary occlusive postpapillary syndrome due to duodenal compression could cause the reflux of bile into the pancreas causing inflammation. On the other hand, Inflammation of the pancreas could also cause paralytic ileus or peripancreatic edema thus reducing the aortomesenteric angle.<sup>3</sup>
- Aortomesenteric angle of less than 22° along with an aortomesenteric distance less than 8mm on imaging corresponds strongly to SMAS.<sup>4</sup>
- SMAS complicated acute pancreatitis is usually conservatively treated by correcting electrolyte disturbances, gastroduodenal decompression and nutritional support, with a goal of weight gain to allow for retroperitoneal fat pad reinforcement.<sup>5</sup>

## Conclusion

- Timely diagnosis and treatment of Pancreatitis is pivotal to avoid serious complications such as fatal electrolyte abnormalities, hemorrhage, peritonitis, necrosis, hypovolemic shock, oliguria, or sudden cardiovascular collapse.<sup>7</sup>
- Surgery is indicated for patients where conservative management fails.<sup>6</sup> Available surgical options include gastrojejunostomy, duodenojejunostomy and lysis of the ligament of Treitz with mobilization of the duodenum.

## References

1. Wilkie DPD. Chronic duodenal ileus. *Br J Surg.* 1921;9(34):204-214. doi:10.1002/bjs.1800093405
2. Lipli F, Hannig C, Weiß W, Allescher HD, Classen M, Kurjak M. Superior mesenteric artery syndrome: Diagnosis and treatment from the gastroenterologist's view. *J Gastroenterol.* 2002;37(8):640-643. doi:10.1007/s005350200101
3. Sihuay-Diburga DJ, Accarino-Garaventa A, Vilaseca-Montplet J, Azpiroz-Vidaur F. Acute pancreatitis and superior mesenteric artery syndrome. *Rev Española Enfermedades Dig.* 2013;105(10):626-628. doi:10.4321/s1130-01082013001000009
4. Merrett ND, Wilson RB, Cosman P, Biankin A V. Superior mesenteric artery syndrome: Diagnosis and treatment strategies. *J Gastrointest Surg.* 2009;13(2):287-292. doi:10.1007/s11605-008-0695-4
5. Suhani, Aggarwal L, Ali S, Jhaketiya A, Thomas S. Short and hypertrophic ligament of treitz: A rare cause of superior mesenteric artery syndrome. *J Clin Diagnostic Res.* 2014;8(10):ND03-ND04. doi:10.7860/JCDR/2014/8852.4938
6. Kabashi-Muqaj S, Kotori V, Lascu LC, Bondari S, Ahmetgjekaj I. The Role of MSCT in Superior Mesenteric Artery Syndrome (SMAS). *Curr Heal Sci J.* 2016;42(3):298-300. doi:10.12865/CHSJ.42.03.11
7. Bassi C, Falconi M, Sartori N, Bonora A, Caldiron E, Butturini G, Salvia R, Pederzoli P. The role of surgery in the major early complications of severe acute pancreatitis. *Eur J Gastroenterol Hepat.* (1997);9:131–136.