

Superior Mesenteric Artery Syndrome Diagnosed by Ct scan: A Case Report

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Abstract

Superior mesenteric artery syndrome (SMA) is a rare disease resulting from superior mesenteric artery compression on the third part of the duodenum. The patient presented with gastrointestinal symptoms. The imaging modalities were playing role for diagnosis the syndrome and underwent CT scan was the standard imaging modality for diagnosis. Our report case was the SMA syndrome which presented in the National Cancer Institute, Misrata-Libya. We described mentioned rare case and showed the importance of CT scan among the imaging modalities in the diagnosis of the superior mesenteric artery syndrome unequivocally.

Keywords: Superior Mesenteric Artery Syndrome, Ct scan, Abdominal Pain

Background

Superior mesenteric artery syndrome is a rare disease and it was known as Wilkie syndrome or cast syndrome with arteriomesenteric duodenal compression. The superior mesenteric artery (SMA) syndrome is a compression of SMA on the third portion of the duodenum. This compression was first described by Carl von Rokitansky in 1861 [1-4]. The disease affects mainly the adolescents and young adults, between 10 and 30 years old, its frequency occurs among females more than males. The main cause of the syndrome was the narrowing of the angle between aorta and superior mesenteric artery. The normal range of the angle was between 25–41 degrees, while in other literature the normal range was 28 to 65 degrees. The normal range of aortomesenteric distance was 10 to 34 mm [3-5].

A number of factors diminish aortomesenteric angle include loss of weight, decreasing in retroperitoneal fat, trauma, surgical intervention, exaggerated lumbar lordosis, congenital low or high origin of superior mesenteric artery.

Patients of SMA syndrome usually presented with vague and non-specific symptoms of obstruction as postprandial discomfort, pain, vomiting, bile emesis and weight loss. Placed patient in position of prone or right lateral decubitus relief the obstructive symptoms [6,7].

Establishment of the diagnosis was based on interpretation of clinical findings alongside imaging investigations. Various imaging techniques can be used for diagnosis of SMA syndrome include; plain film, barium x-ray, endoscopy and ultrasound.

X-ray may show dilatation of the first and second portions of the duodenum and may be associated with stomach dilatation. Endoscopic ultrasound study using mini probe may reveal measurement of aortomesenteric angle. Endoscopy and x-ray barium can be used but they were non-specific investigations. CT scan and MRI are very helpful imaging modalities in the diagnosis of SMA syndrome which allow demonstration of the intraabdominal fat, measurement of aortomesenteric angles and aortomesenteric distance [7-11]

Case Presentation

A 26 years old male patient presented with complaint of recurrent abdominal pain and nausea particularly after overeating since longer than 7 years ago. The patient visited doctors many times previously in OPD with the same complaint. The diagnosis might be missed for long time. No history of abdominal trauma or surgical intervention. He denied history of weight loss. The physical examination revealed; appearance of patient sick, but his built looks normal and not lordotic or any skeletal abnormality, normal his pulse rate and blood pressure, respiratory rate, temperature with normal height and weight. The recent laboratory parameters investigations were within normal limits; showed normal complete blood count, normal blood chemistry analysis including liver enzymes, C-reactive protein, renal function tests. No detectable abnormality on the ultrasound study.

No CT examination was performed before this current CT scan study. Underwent thin-slice MDCT scan of abdomen and pelvis with IV non-ionic contrast media (omnipause contrast 300). CT scan revealed mild dilatation of first, second portions of the duo-

denum and mild stomach distension with well delineated vessels. Reduced retroperitoneal fat led to narrowing of space between aorta and superior mesenteric artery. The measurements of aortomesenteric distance on CT scan was 6 mm, and aortomesen-

teric angle was 20 degrees (figures 1,2). The rest of abdominal organs were normal on the bases of CT study. The interpretation of clinical symptoms, signs and CT scan findings give rise the diagnosis which was consistent with SMA syndrome.

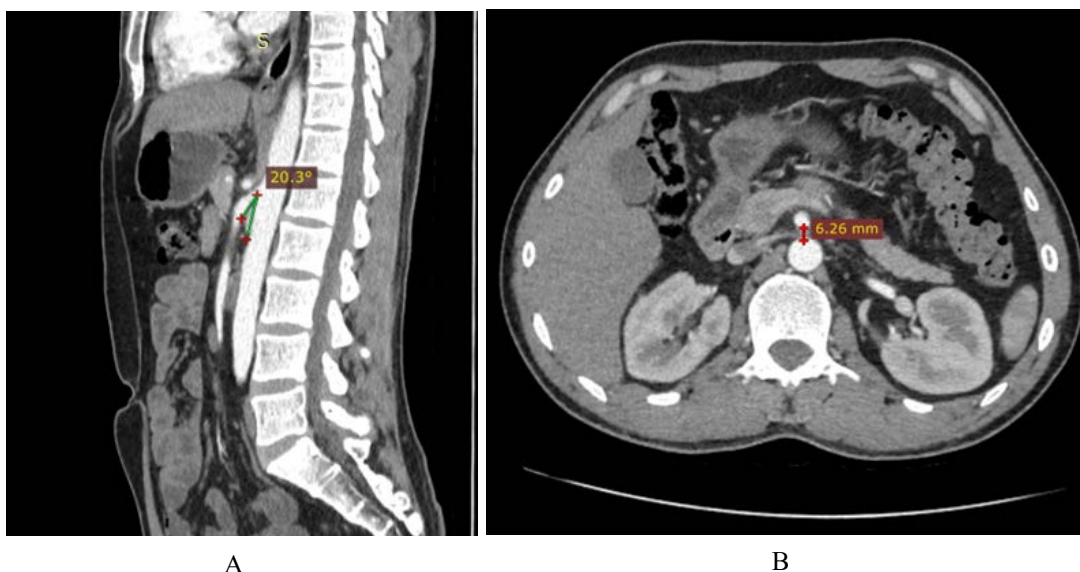


Figure 1: A; Sagittal CT Scan Study of Abdomen Showed Measured Value of Aortomesenteric Angle. B; Axial CT scan Showed Measured Value of Aortomesenteric Distance.

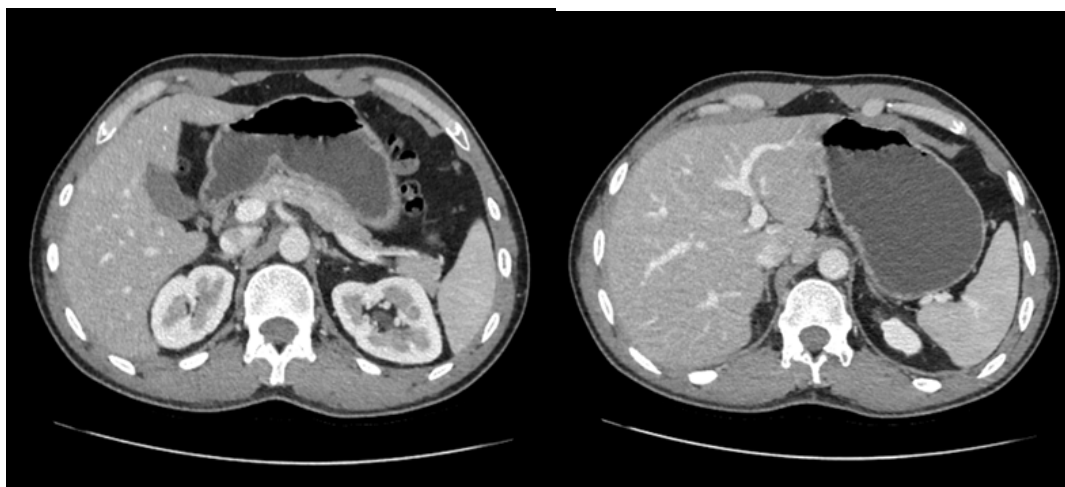


Figure 2: Ct scan of Abdomen and Pelvis Revealed Mild Dilatation of the Proximal Duodenum, with Mild Stomach Distention.

Discussion

Superior mesenteric artery syndrome is uncommon and the patient usually presented with vague symptoms; He or she may be presented with complaint of epigastric pain, vomiting, nausea and weight loss. The cause of SMA syndrome may be trauma, lumbar hyperlordosis or surgical spinal correction, congenital low or high origin of SMA or reduced aortomesenteric fat as well as the symptoms become prominent in post overeating time. Some reports of literature suggested that low weight does not always responsible for all cases of SMA syndrome [12]. Our patient presented with recurrent epigastric pain, nausea and he hasn't history of weight loss. The symptoms and signs mimicked the symptoms and signs of many other diseases. The clinical examination showed no abnormal physical signs and the diagnosis was not known before the current CT scan examination.

Delay of SMA syndrome diagnosis occurs due to non-specific symptoms and due to the rarity of the disease in the population. Early diagnosis is an important to avoid complication with decreasing in chance of morbidity and mortality. Radiological studies can establish the diagnosis including x-ray and abdominal ultrasound. X-ray can show dilatation of the first and second portions of the duodenum with or without dilatation of the stomach. Upper barium study is limited use for assessment of superior mesenteric artery syndrome due to severe gastroparesis. Use of gastroduodenal endoscopies may reveal suspected diagnosis of SMA syndrome, but endoscopy is low in diagnostic value. Endoscopic ultrasound is often difficult to image SMA syndrome due to artifact of food, air-filling of the stomach and can be used to rule out intestinal tumors and gastric or duodenal ulcer. CT scan and MRI are the standard modalities to find out

certain findings of SMA syndrome with unequivocal diagnosis. Abdominal MDCT scan with contrast medium was performed for our patient and the detectable findings include mild dilatation of first and second portions of the duodenum with mild stomach distension beside to compression on the third portion of the duodenum. The scanning showed well delineated vessels which measured the aortomesenteric distance properly on CT scan and it was 6 mm, and aortomesenteric angle was 20 degrees. Both parameters of aortomesenteric distance and aortomesenteric angle of the case were less than normal ranges (normal distance range 10 to 28 mm and normal angle range 25-34 degrees). The other literature reported more wide normal range of the distance that was 36 to 65 degrees in healthy persons.

In the literature the frequency of aortomesenteric syndrome was a rare in the population and it was lower in frequency among males than females, hence we reported this rare case of male patient with characteristic features and it may be the first reported case in Libya as well as CT scan was the modality of choice for the diagnosis.

Conclusion

Superior mesenteric artery syndrome was rare and its frequency was higher among females than males. We reported this rare case of male patient. The diagnosis of the disease was delayed before its reference to CT scan, while the diagnosis demonstrated clearly after referring to CT scan section in the National Cancer Institute [13].

References

1. Asthik Biswas, Arul Arokia Sensan Babu, Sankar Neelakantan, Partha Sarathi Sarkar (2016) Superior mesenteric artery syndrome: CT findings, BMJ Case Reports: first published as bcr2016215885.
2. Hidayatullah Hamidi, Mohammad Tareq Rahimi, Sahar Maroof, Freba Ahrar Soroush (2019) Computed tomography features and surgical treatment of superior mesenteric artery syndrome: A case report, Radiology Case Reports 14: s1529-1532.
3. Hadi SS, Kareem TF, Kamal AM (2022) Normal values of angle and distance between the superior mesenteric artery and aorta in Iraqi population: A single centre study, J Med Radiat Sci 69: 191-197.
4. Irina Ciortescu, Roxana Nemteanu, Corina Hincu, Liliana Gheorghe, Alina Plesa (2022) An underrated diagnosis of superior mesenteric artery syndrome: A case report, Diagnostics 12: 2159.
5. Horne NV, Jackson JP (2022) Superior mesenteric artery syndrome, Stat Pearls Internet <https://www.ncbi.nlm.nih.gov>.
6. Kothari TH, Machnicki S, Kurtz L (2011) Superior mesenteric artery syndrome. Can J Gastroenterol. 25: 599-600.
7. Emanuele Sinagra, Dario Raimondo, Domenico Albano, Valentina Guarnotta, Melania Blasco, et al. (2018) Superior mesenteric artery syndrome: Clinical, endoscopic and radiological findings, Gastroenterol Res Pract 1937416.
8. Jee Wan Wee, Tae Hee Lee, Joon Seong Lee, Wan Jung Kim (2013) Superior mesenteric artery syndrome diagnosed with linear endoscopic ultrasound (with video) in a patient with normal body mass index, Clin. Endosc 46: 410-413.
9. Rasheed M, Mohammad D, Hisham L (2021) Superior mesenteric artery syndrome, rare yet overlooked diagnosis, The American Journal of Gastroenterol 116: S1511.
10. Hegde A, Desai SB (2009) Superior mesenteric artery syndrome demonstrated by computed tomography, J HK Coll Radiol 11: 161-163.
11. Kim JY, Shin MS, Lee SH (2021) Endoscopic features for early detection of superior mesenteric artery syndrome in children 21: 392.

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