



SUPERIOR MESENTERIC ARTERY SYNDROME: CONTRAST ENHANCED CT SCAN OF ABDOMEN IS ONE STOP ANSWER

Gastroenterology

Dr. Madhav Changela*

MBBS, P. D. U. Medical College, Rajkot, Gujarat, India. *Corresponding Author

Dr. Dhairya Salvi

MBBS, P. D. U. Medical College, Rajkot, Gujarat, India.

Dr. Meet Kachhadia

MBBS, P. D. U. Medical College, Rajkot, Gujarat, India.

Dr. Archana Salvi

Associate Professor, Department of Radiology, GAIMS, Gujarat, India.

ABSTRACT

Superior mesenteric artery (SMA) syndrome is a rare disorder in which acute angulation of SMA causes compression of the third part of the duodenum between the SMA and the aorta, resulting in duodenal obstruction. We report the case of 40 year old male patient presented with vomiting and pain in abdomen. X ray and USG of abdomen were used as initial tool for diagnosis but could not help diagnose definitive cause of obstruction. Contrast Enhanced CT was used for final diagnosis with prior checking of serum creatinine level. CECT abdomen showing accurate AMA and AMD is one step imaging modality in diagnosis of SMA syndrome. Aortomesenteric angle and Aortomesenteric distance criteria should be used in co-relation with clinical presentation.

KEYWORDS

superior mesenteric artery syndrome, contrast enhanced CT scan, CECT abdomen

INTRODUCTION

Superior mesenteric artery (SMA) syndrome is a rare disorder in which acute angulation of SMA causes compression of the third part of the duodenum between the SMA and the aorta, resulting in duodenal obstruction. Loss of retroperitoneal fat pad and fat cushion encircling the proximal superior mesenteric artery leads to narrowing of aortomesenteric distance (AMD) and angle between SMA and aorta. i.e. aorto-mesenteric angle (AMA). It is associated with spinal manipulation in the surgical or conservative management of scoliosis, in cases of extensive burns, major surgeries such as ileoanal pouch anastomosis, multiple combat injuries, severe trauma, considerable weight loss in patients with malignancies, anorexia nervosa or other eating disorders, as well as following the application of spica casts.

CASE REPORT

We report the case of 40 year old male patient presented with vomiting and pain in abdomen. X ray and USG of abdomen were used as initial tool for diagnosis. Contrast Enhanced CT was used for final diagnosis with prior checking of serum creatinine level. CECT images were taken in arterial phase after intravenous injection of Ultravist dye. Patient undergone CECT abdomen showing dilated stomach, first and second part of duodenum with narrowing of duodenum between aorta and SMA while crossing mid line from right to left. Prolonged nasogastric decompression and nasojejunal feeding resulted in resolution of the symptoms. Patient was put on non surgical measures to restore retroperitoneal fat. Proper positioning of the patient after eating is advised. Options for surgery include a duodenojejunostomy or a duodenal derotation procedure (otherwise known as the Strong procedure) to alter the aortomesenteric angle and place the third and fourth portions of the duodenum to the right of the superior mesenteric artery.

Imaging Workup



Figure 1- X-ray abdomen standing showing 'double bubble' appearance showing possibility of duodenal obstruction.



Figure 2- Sonography Of Abdomen Shows Narrowing Of AMA With Acute Origin Of SMA From Aorta.

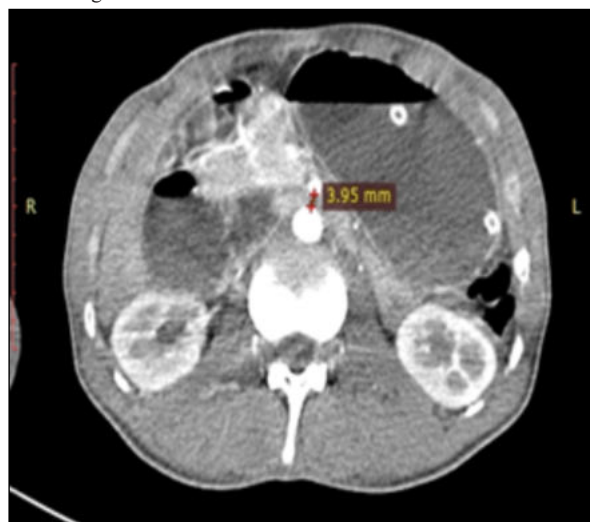


Figure 3- CECT Arterial Phase. On axial image dilated stomach is seen. Distance between aortal and SMA is 04 mm. Narrowing of duodenum seen between aorta and SMA with dilated proximal duodenum.



Figure 4- CECT arterial phase. Sagittal reformat image shows AMD 04 mm. suggestive of duodenal obstruction from narrow aorto - mesenteric angle.



Figure 5- CECT arterial phase. Sagittal reformat image shows aorto-mesenteric angle about 13 degree suggestive of duodenal obstruction from narrow aorto -mesenteric angle.

DISCUSSION

Superior mesenteric artery (SMA) syndrome is an unusual form of intestinal obstruction caused by vascular compression of the third portion of the duodenum between the aorta and the SMA. The clinical diagnosis can be confirmed radiologically in 95% of cases. The following radiological criteria have been established for the diagnosis of SMA: - dilatation of the first and second portions of the duodenum, with or without gastric dilatation; - abrupt vertical and oblique compression of the mucosal folds; - antiperistalsis flow of barium proximal to the obstruction, producing a to-and-fro movement; - delay of 4 to 6 hours in transit through the gastroduodenal region.. X ray shows duodenal obstruction but not the definite cause. Although USG can measure aorto-mesenteric angle, the gas in duodenum may obstruct the view of aorta (which lies posterior to duodenum) and hence hinder the measurement of AMA. Barium study can show duodenal obstruction but not the definite cause. On CECT, AMA and AMD can be measured accurately and narrowing of third part of duodenum between aorta and SMA can be well delineated. MRI may give same result as CECT but is costly and not easily available at all places.

CONCLUSION

CECT abdomen showing accurate AMA and AMD is one step imaging modality in diagnosis of SMA syndrome. AMA and AMD criteria should be used in co-relation with clinical presentation. If the diagnosis is delayed or missed, SMA syndrome can cause considerable morbidity and may result in potentially life-threatening complications.

REFERENCES:

- (1) Lamba Ramit, Tanner T, Sekhon Simran, McGahan P, Corwin T, Lall G. Multidetector CT of vascular Compression Syndromes in the Abdomen and Pelvis. *Radiographics*. 2014;34(1):93-115.
- (2) Fong KKJ, Poh ACC, Tan AGS, Ranu T. Imaging Findings and Clinical Features of Abdominal Vascular Compression Syndromes. *Am J Roentgenol*. 2014;203(1):29-36
- (3) Hearn JB. Duodenal ileus with special reference to superior mesenteric artery compression. *Radiology* 1966;86:305-10.
- (4) Merrett ND, Wilson RB, Cosman P, Biankin AV. Superior mesenteric artery syndrome: diagnosis and treatment strategies. *J Gastrointest Surg*. 2009;13(2):287-292
- (5) Kaur A, Pawar NC, Singla S, Mohi JK, Sharma S. Superior Mesenteric Artery Syndrome in a Patient with Subacute Intestinal Obstruction: A Case Report. *J Clin Diagn Res*. 2016;10(6):TD03-TD5.