



ROLE OF MDCT IN DIAGNOSING WILKIE'S SYNDROME – CASE SERIES

Radio-Diagnosis

Dr Naveen D	Assistant Professor, Department of Radiodiagnosis, Sapthagiri Institute of Medical Sciences and Research centre, Bengaluru 560090.
Dr Vishwaprem Raj D R*	Associate Professor, Department of Radiodiagnosis, Sapthagiri Institute of Medical Sciences and Research centre, Bengaluru 560090. *Corresponding Author
Dr Mallikarjunappa B	Professor and Head, Department of Radiodiagnosis, Sapthagiri Institute of Medical Sciences and Research centre, Bengaluru 560090

ABSTRACT

The Wilkie's syndrome or superior mesenteric artery syndrome is a rare medical condition resulting from the compression of the third part of the duodenum in between the aorta and the superior mesenteric artery. The usual symptoms of SMA syndrome are postprandial or intermittent abdominal pain and vomiting or nausea or anorexia. Patient are often underweight and comes with history of reduced pain on lying prone or adopting the left lateral decubitus position. MDCT plays an important role in diagnosing this condition by assessing the reduced aorto-mesenteric angle and aorto-mesenteric distance with the help of multi-planar reconstruction.

KEYWORDS

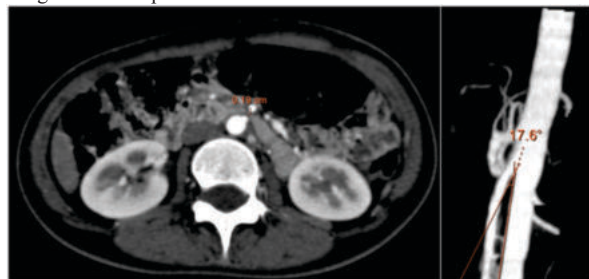
Wilkie Syndrome, Superior Mesenteric artery Compression Syndrome, Cast Syndrome, Aorto-mesenteric artery compression, Arterio-mesenteric duodenal compression, duodenal vascular compression.

INTRODUCTION

The Wilkie's syndrome or superior mesenteric artery syndrome is a rare medical condition resulting from the compression of the third part of the duodenum in between the aorta and the superior mesenteric artery [1,2]. This condition was first described by Wilkie in 1927[3]. This syndrome is also known as aorto-mesenteric artery compression, arterio-mesenteric duodenal compression, duodenal vascular compression, superior mesenteric artery, Wilkie's or cast syndrome [1]. The classical clinical presentation is recurrent postprandial pain, nausea, vomiting, bloating, abdominal discomfort or pain and tenderness [4]. The third part of the duodenum is compressed by superior mesenteric artery which results in dilatation of duodenum and stomach. Radiological investigation like Barium studies of the upper gastrointestinal tract and MDCT play an important role in diagnosing this rare condition [5].

CASE1

17 year old female patient came with history of vomiting, loss of weight with mild pain abdomen.



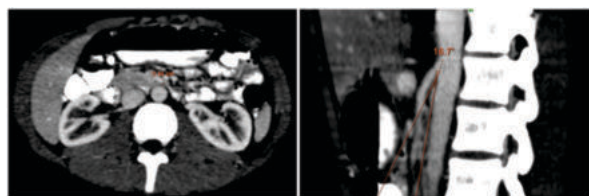
Abrupt narrowing of 3rd part of duodenum between superior mesenteric artery and aorta with mildly dilated proximal duodenum.

Aortomesenteric angle: 17.6°

Aortomesenteric distance: 1.9mm.

CASE 2

20 year old male patient came with history of vomiting and pain abdomen.



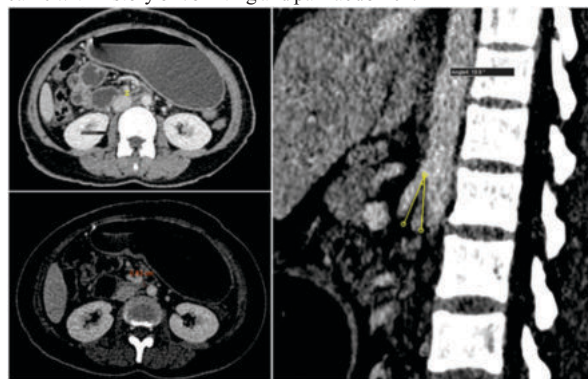
Abrupt narrowing of 3rd part of duodenum between superior mesenteric vessels and aorta with mildly dilated proximal duodenum.

Aortomesenteric angle: 16.7°

Aortomesenteric distance: 3.4mm.

CASE3

30 year old female patient with past history of chronic pancreatitis came with history of vomiting and pain abdomen.



Abrupt narrowing of 3rd part of duodenum between superior mesenteric vessels, aorta and inferior vena cava with mildly dilated proximal duodenum.

Aortomesenteric angle: 19.9°

Aortomesenteric distance: 6.3mm

Cavomesenteric distance: 3.5mm.

DISCUSSION

The mesenteric adipose tissue normally surrounds the duodenum near the aortomesenteric plane where the duodenum traverses between aorta and mesenteric vessel. This fatty tissue acts as a cushion and prevents extrinsic compression [3,6].

Hence any conditions causing marked weight loss like chronic debilitating disease or an acute catabolic state and a low body mass index are the main risk factors [3,7].

This entity was first described by the Austrian professor Carl von Rokitsansky in his anatomy textbook in 1842 [1,8]. Wilkie published the first comprehensive series of 75 patients in 1927 and his name has

become a common eponym for the superior mesenteric artery syndrome[1,9].

The usual symptoms of SMA syndrome are postprandial or intermittent abdominal pain and vomiting or nausea or anorexia. Patient are often underweight and comes with history of reduced pain on lying prone or adopting the left lateral decubitus position [3].

Radiological Findings:

The narrow space between the SMA and aorta due to loss of the intervening mesenteric fat pad causes compression of third part of duodenum as it passes through this space [4].

On MDCT, the two main key signs to diagnose SMA syndrome are an aortomesenteric angle of less than 20° and an aortomesenteric distance of less than 8mm [3,4]. The normal aortomesenteric distance is typically between 10 and 28mm and is measured at the level of the duodenum as it travels between the aorta and SMA [3,5,10]. Other additional features include dilatation of stomach and duodenum till aortomesenteric space with sharp narrowing as the duodenum passes below SMA [3, 11]. Simple sagittal reconstructions may be insufficient for assessing the aortomesenteric angle because of the normal slight anterolateral angulation of the SMA; an obliquely oriented sagittal reconstruction provides more accurate measurements [3,12].

Therapeutic options for Wilkie's syndrome are conservative management or surgical bypass of the obstruction. The goal of medical therapy is to induce weight gain, which would presumably result in an increase in fat at the mesenteric root [4]. Medical treatment pursues correction of the fluid and electrolyte balance, a positive nitrogen balance and an increase in body weight promoting restoration of the retroperitoneal fat tissue with consecutive increase of the aortomesenteric angle [1,2].

Surgery is indicated when conservative treatment fails and patient is symptomatic. Several surgical procedures including gastrojejunostomy, duodenojejunostomy and Strong's operation (duodenal mobilization for lowering the duodenojejunal flexure) have been performed to resolve or by pass duodenal compression [1,13].

CONCLUSION

Wilkie's syndrome is rare condition resulting from compression of third part of duodenum by superior mesenteric artery and aorta. MDCT plays an important role in diagnosing this condition by assessing the reduced aortomesenteric angle and aortomesenteric distance with the help of multiplanar reconstruction.

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