VOLUME-6 | ISSUE-1 | JANUARY-2017 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 78.46

Median Arcuate Ligament Syndrome-A Case Report

General Surgery

KEYWORDS: median arcuate ligament, dunbar syndrome,compression of artery,MALS,celiac artery compression syndrome

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ABSTRACT

The median arcuate ligament syndrome (MALS, also known as celiac artery compression syndrome, celiac axis syndrome, celiac trunk compression syndrome or Dunbar syndrome) is a condition characterized by abdominal pain attributed to compression of the celiac artery and possibly the celiac ganglia by the median arcuate ligament.[1] This is a case of a A 35/F was admitted with complaints of epigastric pain Postprandial fullness Weight loss of ~10 kgs in 6 months , occasional emesis and anorexia .CT angiography with Digital Subtraction shows focal narrowing of the proximal celiac artery with poststenotic dilatation and indentation on the superior aspect of the celiac artery and a hook-shaped contour of the celiac artery supporting a diagnosis of MALS. A fibrous band of Median Arcuate Ligament was found to compress the Coeliac trunk, which was idenified and cut released. Median Arcute Ligament syndrome is a difficult diagnosis to arrive at, in a majority of patients. A patient with suspected compression of the coeliac artery should undergo mesenteric ultrasound with evaluation of the arterial velocity. Patients who have evidence of median arcuate ligament syndrome should undergo surgical decompression; which can be done via open traditional method or minimal invasive methods.

INTRODUCTION

The median arcuate ligament is a ligament formed at the base of the diaphragm where the left and right diaphragmatic crura join near the 12th thoracic vertebra. This fibrous arch forms the anterior aspect of the aortic hiatus, through which the aorta, thoracic duct, and azygos vein pass. The median arcuate ligament usually comes into contact with the aorta above the branch point of the celiac artery. However, in up to one quarter of normal individuals, the median arcuate ligament passes in front of the celiac artery, compressing the celiac artery and nearby structures such as the celiac ganglia.[1] In some of these individuals, this compression is pathologic and leads to the median arcuate ligament syndrome.[1]

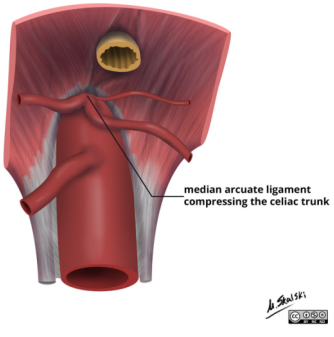

Figure 1 : MALS

Several theories attempt to explain the origin of pain caused by compression of the celiac artery.[2] One proposes that compression of the celiac artery causes ischemia, or decreased blood flow, to abdominal organs, leading to pain. Another hypothesizes that there is compression not only of the celiac artery but also of the celiac ganglia, and that pain results from compression of the latter.

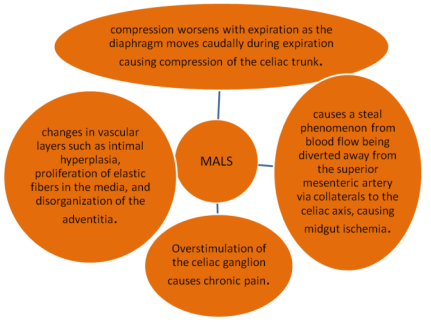

Figure2 Pain in MALS

Presenting Complaints

A 35/F was admitted with complaints of:

- epigastric pain
- Postprandial fullness
- Weight loss of ~10 kgs in 6 months
- Occasional emesis

- Anorexia

Clinical Findings

Past History:

- No significant medical past history.

Examination:

- Mild tenderness in epigastrium.
- Bruit heard over the epigastrium on auscultaion.
- No other abnormality detected

Investigations:

- All blood investigations within NORMAL parameters.
- USG NORMAL with no e/o cholelithiasis.
- CT angiography with Digital Subtraction showed
- focal narrowing of the proximal celiac artery with poststenotic dilatation
- indentation on the superior aspect of the celiac artery
- hook-shaped contour of the celiac artery supporting a diagnosis of MALS.

Treatment

Patient was prepared for Exploratory Laparotomy with Vascular surgeon on standby.

The band of median arcuate ligament was visualized indenting the coeliac artery

A release incision made on the ligament and tension released.No post operative complications noted.

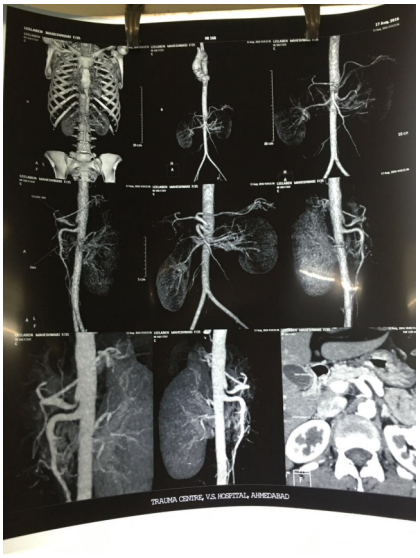

Figure 3 CT Angiogram MALS

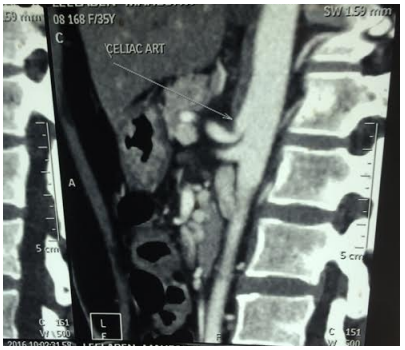

Figure4 CT Angiogram MALS

DISCUSSION

Median arcuate ligament syndrome is a diagnosis of exclusion.[1][2] The diagnosis of MALS relies on a combination of clinical features and findings on medical imaging.[1] Clinical features include a triad of abdominal pain after eating, weight loss, and an abdominal bruit, although the classic triad is found in only a minority of individuals that carry a MALS diagnosis.[2]

In addition, symptoms of celiac artery compression syndrome are typically chronic and nonspecific, including vague upper abdominal pain, nausea, and emesis. In patients with long-standing symptoms, weight loss may occur owing to decreased oral intake in an attempt to mitigate postprandial symptoms.

Physical examination is generally unremarkable. Careful auscultation may identify an epigastric bruit, but focal abdominal tenderness and peritoneal signs are absent.

Diagnostic imaging for MALS is divided into screening and confirmatory tests.[2] A reasonable screening test for patients with suspected MALS is duplex ultrasonography to measure blood flow through the celiac artery.[2][6] Peak systolic velocities greater than 200 cm/s are suggestive of celiac artery stenosis associated with MALS.[2]

Further evaluation and confirmation can be obtained via angiography to investigate the anatomy of the celiac artery.[2] Historically, conventional angiography was used, although this has been largely replaced by less invasive techniques such as computed tomography (CT) and magnetic resonance (MR) angiography. [1][2] Because it provides better visualization of intraabdominal structures, CT angiography is preferred to MR angiography in this setting.[2] The findings of focal narrowing of the proximal celiac artery with poststenotic dilatation, indentation on the superior aspect of the celiac artery, hook-shaped contour of the celiac artery support a diagnosis of MALS.[1]

These imaging features are exaggerated on expiration, even in normal asymptomatic individuals without the syndrome.[1]

Proximal celiac artery stenosis with poststenotic dilatation can be seen in other conditions affecting the celiac artery.[1] The hook-shaped contour of the celiac artery is characteristic of the anatomy in MALS and helps distinguish it from other causes of celiac artery stenosis such as atherosclerosis.[1] This hooked contour is not entirely specific for MALS however, given that 10-24% of normal asymptomatic individuals have this anatomy.[1]

Decompression of the celiac artery is the general approach to treatment of MALS.[2] The mainstay of treatment involves an open surgical approach to divide, or separate, the median arcuate ligament to relieve the compression of the celiac artery.[2] This is combined with removal of the celiac ganglia and evaluation of blood flow through the celiac artery, for example by intraoperative duplex ultrasound. If blood flow is poor, celiac artery revascularization is usually attempted; methods of revascularization include aortoceliac bypass, patch angioplasty, and others.[2]

A laparoscopic approach may also be used to achieve celiac artery decompression;[7] however, should the celiac artery require revascularization, the procedure would require conversion to an open approach.[2]

Endovascular methods such as percutaneous transluminal angioplasty (PTA) have been used in patients who have failed open and/or laparoscopic intervention.[2] PTA alone, without decompression of the celiac artery, may not be of benefit.[2][3]

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