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Median arcuate ligament syndrome (Dunbar Syndrome)

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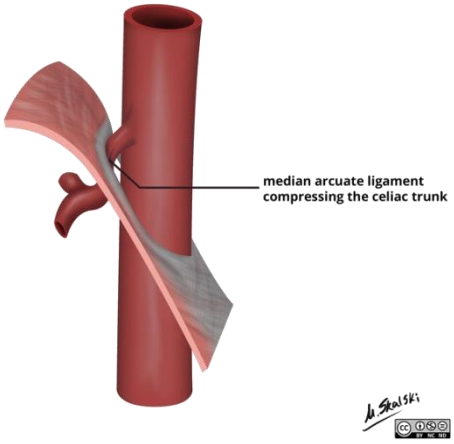
Thisrare conditionis caused byextrinsiccompression, given the low abnormalinsertion of medianarcuateligamentorfibrousbands and ganglionperiaortitis tissue from the celiac plexus. The ligamentiscomposed oftendonmedialedgesof the twopolesof the diaphragmwhichmeetin the median planeto forman archbefore the aorta.

Figure 1. Graphic image of the arcuate ligament compressing the celiac trunk
Case courtesy of Dr Matt Skalski, Radiopaedia.org, rID: 36837



The clinical presentation is variable:
- In most cases asymptomatic
- Weight loss
- Chronic abdominal pain
- Postprandial abdominal discomfort
- Hypertension and tachycardia in the case of renal artery compression

The diagnosis is one of exclusion. Symptomatic patients have numerous investigations for most cases of abdominal pain and underwent cholecystectomies and appendectomies, many unnecessary in order to alleviate the pain. Diagnosis methods: Doppler, angio-CT, angiography or MRI. The gold standard is the angioCT.

Angio-CT: it is highlighted, on sagittal reconstruction, a focal stenosis in the proximal portion of the celiac trunk, bent (hooked appearance). 3D reconstructions can be helpful in identifying stenosis. Gastro-duodenal and hepatic arteries can often be seen as prominent with multiple collaterals.

Differential diagnosis based on imaging is made with atherosclerotic disease.

Our patient D.G., male, aged 53, known with hypertension responsive to treatment and diabetes type II non-insulin requiring, with no clinical complaints, came to the Nephrology Department where an abdominal ultrasound was performed and a pancreatic formation was detected. He came to our department for abdominopelvic CT with contrast iv.

During examination, multiple arterial branches arising from the pancreatic duodenal artery and superior mesenteric artery (arch pancreatitis) are observed, which include pancreatic duodenal region; filiform stenosis in the aortic origin of the celiac trunk, through the median arcuate ligament.

Figure 2. Axial section acquired during early arterial time that highlightsarterialtypecollateral circulationbetweenAMSandtheceliactrunk at the level of the pancreaticduodenalarch.

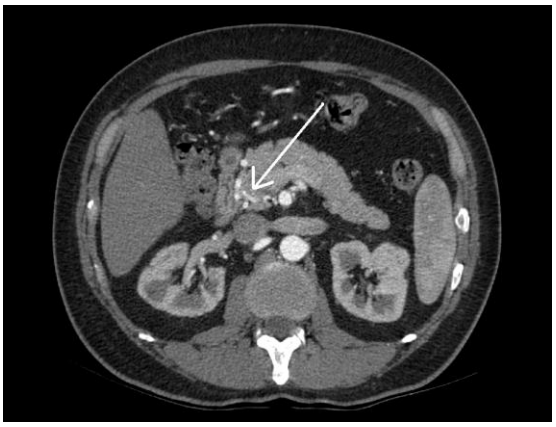


Figure 3. SagittalMPRhighlightingthe trunkceliacfiliformstenosis..

Treatment

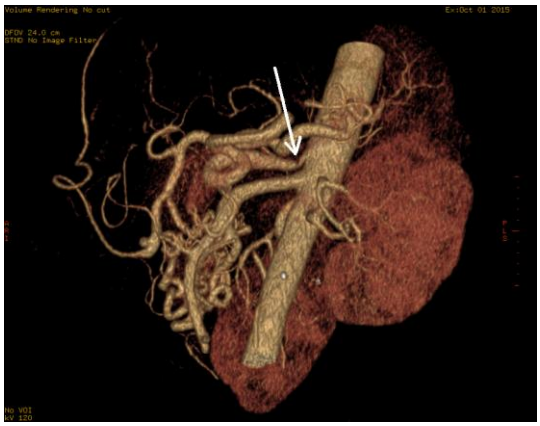
The goal of the treatmentis todecompressand obtain celiacarteryrevascularization.

Treatment optionsare quite limitedandthe revascularization surgery has a riskof morbidity and mortalityof5% to15%.

Astreatment methodsmay be used: conventionallaparotomy, laparoscopyorendovascularmethods(percutaneous transluminalangioplasty, stent implantation).

Laparotomy, by retroperitoneal approach via left subcostal incision or by transabdominal approach via midline incision, allows surgical separation of the median arcuate ligament fibers to decompress the celiac artery. Decompression is completed by celiac ganglion resection and evaluation of celiac artery blood flow using a Doppler ultrasound intraoperatively. In case of low blood flow, celiac artery revascularization is performed.

Figure 4.3DVRImagehighlightingthe filiformstenosis at the origin of theceliac trunk



Revascularization methods include aorto-celiac bypass, angioplasty patch.

Literature studies show that classical laparotomy is no longer prefered, due to an increased risk of morbidity and mortality, especially in patients with associated pathologies.

Laparoscopy is used more frequently compared to laparotomy because it is less invasive presenting a lower risk of morbidity and mortality, with low cost due to short hospitalization.

Laparoscopic intervention also allows decompression of celiac artery, but if the celiac artery requires revascularization, surgical management should be changed and the classic approach should be used (laparotomy).

Percutaneous balloonangioplastyis anattractive methodbecause it isa minimally invasive procedure, ideal forpatients with associated comorbidities. This methoddeliverssuboptimal results because mostlesionsdevelop in theostium. Percutaneous balloonangioplastyinostiallesionsis associated withmore severeresidualstenosisdue tointenseelastic recoilcaused bya large number ofcircularelasticfibersfrom theostium. Because of this,the rateof complications(acute occlusion) and restenosis increases.

Stent implantationoffersa metallic supportthat preventselasticrecoilandthusdecreasesthe complicationsof this type.The risksof this methodincludedistalembolism with secondary ischemia, fat embolism, aortic dissection.

Percutaneous angioplastyandstentimplantation,accordingto a 2009 study,arecomplementary methods to laparoscopyafterdecompression of celiacartery was performed.

DISCUSSION

The peculiarity of thiscaseis thatthe patient did notpresentanysymptoms.Thismay be due tothe development of arichcollateralblood supplythat compensates forceliacartery stenosis.

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