

Common Celiacomesenteric Trunk Originating from Aorta Involved in Atherosclerotic Occlusion Manifested as Acute on Chronic Mesenteric Ischemia

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Abstract

60 year old male patient was admitted with acute on chronic mesenteric ischaemia. He was found to have rare anatomical variant of common celiacomesenteric trunk which had atherosclerotic occlusive disease. Revascularisation by endovascular techniques can effectively treat this condition and avoid catastrophe of massive bowel gangrene in future.

Keywords: Common Celiacomesenteric Trunk; Anatomical Variation; Endovascular Procedures

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Introduction

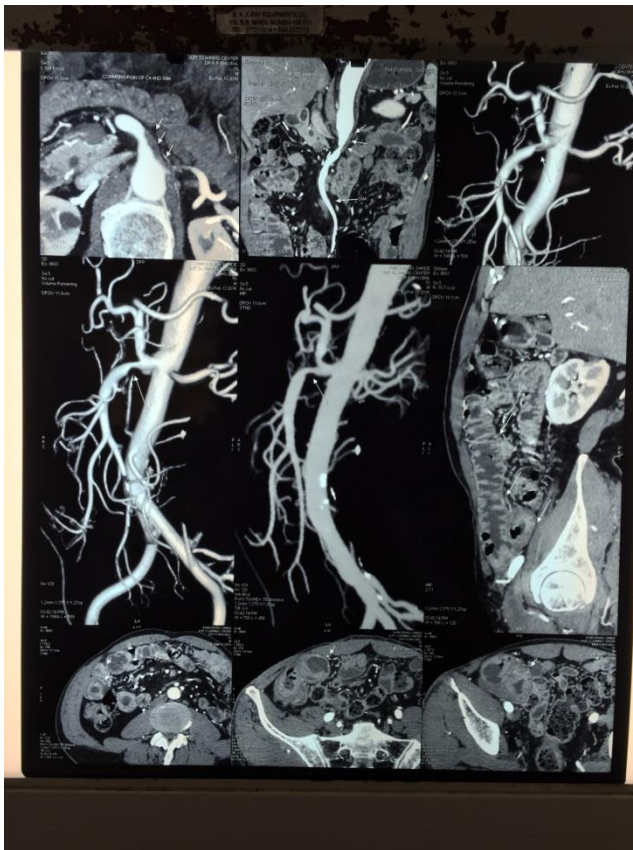
Common celiacomesenteric trunk with the celiac and superior mesenteric arteries having common origin from aorta is the least frequently reported anatomical variation of all abdominal vascular anomalies (< 1 %). Atherosclerotic occlusion of celiacomesenteric trunk predisposes patients to significant risk of mesenteric ischemia. Low index of suspicion is needed to identify the condition. Endovascular interventions like plasty or stenting can be used effectively as treatment options.

Case Report

60 year old non diabetic, hypertensive patient presented to emergency department with history of diffuse central crampy abdominal pain of 2 months duration aggravated since last few days. Patient had history of postprandial pain and significant weight loss. Patient denied history of vomiting, melena or hematemesis.

His vital parameters were normal. On palpation he had diffuse mild tenderness in peri umbilical region. Hematological and biochemical lab investigations were within normal limits. Chest and erect abdominal radiography was unremarkable. USG showed jejunal wall edema. CECT showed diffuse long segment jejunal wall edema with preserved perfusion (Figure 1). It also revealed a common celiacomesenteric trunk originating from aorta with significant atherosclerotic plaques at origin causing significant (> 50%) luminal occlusion of both the major arteries especially the superior mesenteric artery (Figure 1).

Figure 1: Showing atherosclerotic occlusion of common celiacomesenteric trunk and resultant jejunal wall edema.



Discussion

Celiac and superior mesenteric artery having a common origin from aorta accounts for less than 1% of all abdominal vascular anomalies [1] and is estimated to have incidence of 0.25% [2]. Primitive aorta in embryo gives segmental branches to developing digestive tube which are called vitelline arteries. These are paired arteries initially and later fuse to represent three major arteries in dorsal mesentery of the gut namely, celiac, superior mesenteric and inferior mesenteric arteries which supply foregut, mid gut and hindgut respectively [3]. Celiac and superior mesenteric arteries arise from 10th and 13th vitelline arteries. Embryologically occurrence of celiacomesenteric common trunk can be explained by regression of 10th and persistence of 13th roots which are united ventrally [4].

Prior knowledge of this anomaly is of utmost importance during surgical procedures like pancreaticoduodenectomy or lymphadenectomy in this area to avoid complication of injuries to these important vessels with grave untoward outcome [5].

The diagnosis of chronic mesenteric ischemia due to superior mesenteric artery occlusive disease alone is usually delayed due to presence of collateral circulation between superior mesenteric and celiac arteries [6] which compensate to some extent for reduced blood flow to small intestine. Anastomosis between superior pancreaticoduodenal artery (from celiac artery) and inferior pancreaticoduodenal artery (from superior mesenteric artery) is one of the important collateral channels [7, 8].

Such compensatory mechanism of collateral circulation between celiac and superior mesenteric arteries is not possible in patients having common celiacomesenteric trunk when common trunk is involved into occlusive disease as in our patient. In these patients one common trunk supplies a vast area of gastrointestinal tract ranging from stomach upto proximal transverse colon, liver, spleen and pancreas. Thus severe thrombotic occlusions of this common trunk in patients with this anatomical variant can lead to life threatening complications like massive bowel gangrene extending from stomach to transverse colon, ischemic hepatitis and splenic infarction.

Treatment options available include surgical bypass grafting [9] and percutaneous trans luminal angioplasty and stenting [10, 11]. Advances in technique of endovascular procedures, widespread availability, affectivity in achieving successful revascularization and comparatively increased morbidity of surgical bypass grafts procedure, are the reasons of these trans luminal / endovascular techniques becoming the first choice for treatment of patients with chronic mesenteric ischemia due to occlusive diseases of common celiacomesenteric trunk.

References

1. K. Shridhar Varma, Narendra Pamida, V.R.Vollala. Common celiacomesenteric trunk: a rare anatomical variation. *Journal of Vasc.Bras.*2009 Vol. 8 No. 3.
2. Fontain R, Pietri J, Tongio J, Negreivos L. Angiographic study of anatomical study of hepatic arteries based on 402 specialised examinations. *Angiology* 1970, 21: 110-3.
3. Warwick R, Williams LP. *Gray's Anatomy*. Elsevier Churchill Livingstone 39th edition, 2005. Page 1118-20.
4. Garima Sehgal, A. K. Shrivastav, P.K. Sharma, Archana Rani,R.K. Deewan, Pallavi AGA, Anit Parihar. Celiacomesenteric trunk: An unusual variation. *Journal of Anat. Sciences* 21(2) Dec 2013; 1-6.
5. Losanoff JE, Millis JM, Harland RC, Testa G. Hepatospleenomesenteric trunk. *J. Am. Coll. Surg.* 2007; 204: 511.
6. Eric J. Hohenwalter. Chronic mesenteric ischemia: Diagnosis and Treatment. *Seminars Int. Radiology* 2009 Dec; 26(4): 345-51.
7. Cleavland TJ, Nawaz S, Gains PA. Mesenteric vascular ischeamia : Diagnosis and Therapeutic options. *Vasc. Med.*2002; 7: 311-21.
8. Robken J, Shammass NW. Treatment of totally occluded SMA facilitated by retrograde crossing via collateral from celiac trunk. *J. Endovasc. Ther.*2007; 14: 745-7.
9. Ailawadi G, Cowless RA, Stanley JC, Eliason JL, Williams DM, Colleti LM, Henke PK, Upchurch GR Jr. *J.Vasc. Surg.* Nov. 2004; 40(5); 1040-43.
10. Fioole B, Van de Rest HJ, Meijer JR, Van Leersum M, Van Koeverden S, Moll EL. Percutaneous transluminal angioplasty stenting as first choice treatment in patients with chronic mesenteric ischemia. *J. Vasc. Surg.* 2010; 51: 386-91.
11. Silva JA, White CJ, Collins TJ, Jenkins JS, Andry ME, Reilly JP et al. Endovascular therapy for chronic mesenteric ischemia. *J. Am. Coll. Cardiology* 2006; 47; 944-50.