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RESEARCH ARTICLE

A RARE CASE OF ISOLATED CELIAC ARTERY DISSECTION DIAGNOSED IN THE EMERGENCY DEPARTMENT

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Abstract

Introduction: Spontaneous isolated visceral artery dissection is an uncommon event with an unpredictable natural history and may lead to aneurysmal formation, rupture or arterial occlusion. Pre-disposing factors are not specific. With the development of new imaging modalities, Spontaneous isolated visceral artery dissection can be diagnosed at an early stage and can be treated medically or surgically.

Case Report: We report a case of a previously healthy male patient who presented to the emergency department with the complain of tearing kind of back pain radiating to right side of the abdomen for the last 2 hours. The patient was examined and diagnosed with celiac artery dissection. Conservative management was done and patient improved with symptomatic relief.

Discussion: Celiac artery dissection in adults are asymptomatic until an insidious injury occurs and will typically present with rare complains. If dissection involves a branch of the hepatic artery, it may cause liver ischemia leading to higher mortality.

Conclusion: This case demonstrates the importance of considering advanced imaging as a useful diagnostic tool and importance of immediate management to improve outcome of the patient.

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Introduction:-

Spontaneous isolated visceral artery dissection is an uncommon event with an unpredictable natural history with superior mesenteric artery being the most common affected artery. Spontaneous isolated visceral artery dissection should be differentiated from visceral artery dissection accompanied by aortic dissection. Spontaneous isolated visceral artery dissection is a sudden critical condition that may lead to aneurysmal formation, rupture or arterial occlusion. Pre-disposing factors are not specific but have been suggested to be pre-existing vascular disease, hypertension and pregnancy. Spontaneous resolution, definitive occlusion of the artery and formation of aneurysm with associated complications are some other possible outcomes. Recently, with the development of new imaging modalities, Spontaneous isolated visceral artery dissection can be diagnosed at an early stage and if immediately treated, it can improve with conservative therapy. In regards to symptomatic Spontaneous dissection, it is debated whether surgical or endovascular treatment is more appropriate.

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Case Report

A 44 year old male present to emergency department with the complain of tearing kind of back pain radiating to right side of the abdomen for the last 2 hours. Patient has no co-morbidities and no significant past medical or surgical history.

On Examination

1. Temperature : 98.6 degree Fahrenheit
2. Heart Rate : 96/minute
3. All peripheral pulses felt bilaterally equal.
4. Blood Pressure :
On left hand: 150/80 mmHg
On right hand: 170/90 mmHg
1. Oxygen saturation : 99% without oxygen support
2. Random Blood Sugar : 106 mg/dl
3. Cardiovascular system : Normal S1 and S2 is heard
4. Respiratory system : Chest clear with bilateral normal vesicular breath sound
5. Per abdomen : Mild tenderness over epigastric and right hypochondriac region
6. Central nervous system : No focal neurological deficits

Investigation

CT Aortogram:

1. Dissection flap involving the celiac artery starting approximately 8-9 mm distal to its origin with resultant mild dilation.
2. Diffuse wall thickening seen in the common hepatic and splenic artery and the part of the gastro duodenal artery suggesting intramural haemorrhage with presence of perivascular fat stranding.
3. No evidence of significant narrowing or occlusion of the branches of celiac artery is seen.
4. No infarct seen in the liver or spleen.
5. The bowel enhancement appears normal.



Arrow indicate celiac artery dissection

Management:

Patient was given a stat dose of injection heparin 5000 IU (70 IU/ kg) followed by intravenous infusion 1000 IU/ hour (18 IU/ kg/ hour) in the emergency department and then shifted to ICU. Fentanyl and labetalol intravenous infusion was started in the ICU, as analgesic and blood pressure control, respectively. Patient was treated conservatively and improved symptomatically and was discharged on oral medications.

Discussion:-

Spontaneous dissection of visceral arteries was first described by Baurersfeld in 1947.¹ Isolated celiac artery dissection cases were seen as spontaneous occurrence in young patients and were managed either surgically or by

medical management. As per Fenoglio et al, isolated spontaneous celiac artery dissection is usually iatrogenic or secondary to atherosclerosis, trauma, pregnancy, fibromuscular dysplasia, inflammatory or infectious diseases or congenital disorder of the vascular wall.² Another cause of celiac artery dissection might include compression by the median arcuate ligament, in which there is continuous friction or stress on celiac artery each time the diaphragm descends with respiration.¹¹ Histology has shown that the dissection of celiac artery occurs between the intima and the external elastic layer, whereas in dissection of the aorta the cleavage plane is between the first and the second part of the intima.¹ The most common presenting symptom is the sudden onset of severe epigastric or hypochondrial pain. Most patients' physical examinations have yielded normal results except for epigastric tenderness.

Spontaneous arterial dissection is more common in male (5:1) with an average age of patients being approximately 55 years.^{3,10} The predisposing factors include hypertension, pre-existing vascular disease and pregnancy leading to weakening of the arterial wall.⁴ Other precipitating events are mechanical stretching and micro trauma caused by exertion or sudden abdominal hyper pressure (e.g. sneezing, lifting). Other reported risk factors include cystic medical necrosis, abdominal aortic aneurysm, fibromuscular dysplasia, trauma and connective tissue disorders.⁵ Most patients with celiac artery dissection are asymptomatic possibly due to the lack of small bowel involvement. Some patients may present with abdominal pain which may be due to simultaneous involvement of the splenic, renal or superior mesenteric arteries causing infarction and bowel ischemia. Patients with ruptured aneurysms present acutely with bleeding. Chronic dissection can present with symptoms of intestinal angina i.e. post prandial abdominal pain and weight loss.⁵ If dissection involves a branch of the hepatic artery, it may cause liver ischemia leading to higher mortality.

Contrast enhanced CT/CTA is considered the primary technique for diagnosing celiac artery dissection; however, MR angiography, sonography and conventional angiography also can be used.⁵ Celiac artery dissection can be accompanied by celiac artery aneurysm formation.⁶ Diagnostic imaging findings on CT accordingly to Kim et al include an intimal flap, which is pathognomonic or eccentric mural thrombus in the celiac lumen, which should raise suspicion for dissection.⁷ Because the intimal flap is not always visible, mural thrombus may be the only clue to the presence of dissection.^{3,7} Infiltration of the fat surrounding the celiac axis may be seen in acute spontaneous celiac artery dissection. This finding may be predictive of the acuity of dissection and predisposition toward extension of dissection into adjacent vessels as suggested by D'Ambrosio et al.³

Treatment strategy for dissection includes limiting progression of the dissecting hematoma, controlling hypertension and administering anticoagulants to prevent thromboembolic complications. In addition, secondary antiplatelet therapy is advisable in patients with stenotic lesions to prevent thrombosis. Surgical treatment of celiac artery dissection is performed to prevent acute complications like aneurysm rupture, intestinal ischemia or to prevent chronic complications like stenosis. Surgical treatment options include resection of the dissected segment with anastomosis or bypass creation. In addition, surgery allows for biopsy of the affected artery which may be necessary to exclude vasculitis as the cause of dissection.⁵ The risk of bowel ischemia associated with celiac artery dissection is less than that associated with SMA dissection. Accordingly to Schievink et al, surgery and endovascular procedures may be considered when a patient is hemodynamically unstable, has persistent abdominal pain, when medical therapy fails to control blood pressure and when dissection is progressing.⁸ Endovascular management of celiac artery dissection has been infrequently reported, however endovascular stent placement or fenestration has been reported in spontaneous mesenteric artery dissection.⁹ To prevent thromboembolic complications, therapy with anticoagulant or antiplatelet agents for 3 to 6 months with target INR of 2.0 - 3.0 with strict blood pressure control has been suggested.^{2,7} Medical treatment also may include antihypertensive drugs, anti-inflammatory drugs, steroids, in addition to anticoagulants.³

Spontaneous celiac artery dissection is rare, but the incidence may have been underestimated due to the varied presenting symptoms and outcomes. They are now more frequently reported as a result of the progress of imaging modalities such as US, CT and angiography. Clinicians must be aware of the possibility of spontaneous isolated dissection of the celiac artery in patients with postprandial abdominal pain.

Conclusion:-

Spontaneous isolated celiac artery dissection is very rare condition and can present with various kind of abdominal pain. CTA or MRA can be used to diagnose. In most cases the cause of dissection is unknown. The optimal treatment has not been established but may involve simple surveillance, medical treatment and/or surgical/endovascular repair, depending on the clinical features.

Declarations**Ethical Approval**

During Publication of this case study, patient's identity remains undisclosed. The case study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Consent to participate

During Publication of this case study, patient's identity remains undisclosed. Not applicable.

Consent for publication

During Publication of this case study, patient's identity remains undisclosed. Not applicable

Competing interests

The author declare that he has no competing interests.

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Abbreviations:

1. e.g. = exempli gratia
2. mmHg = millimetres of mercury
3. mg/dl = Milligrams per decilitre
4. IU = International Unit

5. ICU = Intensive Care Unit
6. CTA = computed tomography angiography
7. MRI = Magnetic resonance imaging
8. MRA = Magnetic resonance angiography
9. SMA = superior mesenteric artery
10. INR = International normalized ratio

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