



CASE STUDY

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SUPERIOR MESENTERIC ARTERIAL EMBOLISM ASSOCIATED WITH BRACHIAL ARTERY EMBOLISM AND RENAL INFARCT: A CASE STUDY

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ABSTRACT

Acute mesenteric embolism may present with features of multiple other site embolism which is associated with high mortality rate. The incidence of brachial artery embolism and renal artery embolism associated with SMA embolism is rarely described. The signs and symptoms of ischemic change in bowel which present as acute abdomen may masks other circumstances alike brachial artery embolism and renal infarct. In these cases, a delayed diagnosis of other embolism can result in significant morbidity or mortality.

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INTRODUCTION

Vascular occlusive disease of mesenteric vessels is a uncommon disease but a devastating condition presents in patients above 60 years which is more frequent in women. In acute embolic mesenteric ischemia, emboli typically originate from cardiac source especially in patients with a trial fibrillation or recent MI .Similarly upper limb embolism and renal infarct may be attributed to above source. In our case source was unknown on evaluation. Up per limb embolic occlusion was at level of brachial artery which presented with painful left upper limb and absent pulse. At times upper limb emboli may lead to gangrene and amputation. Renal artery thrombosis itself is a rare disease and it's associated with above occlusive vascular disease is a very rare incidence. In our case renal infarct presented with features of raised renal parameters. SMA Embolism is managed surgically with laparotomy with resection of small bowel, ileostomy and mucus fistula. Brachial artery thrombosis and renal artery thrombosis are managed conservatively with anticoagulation.

Case Report

A 38-year old Indian men complained of acute onset of abdominal pain and vomiting. His vital signs were stable apart from being tachycardia and non palpable left upper limb pulses. The laboratory data reveals leucocytosis and raised renal parameters. CT imaging revealed dilated small bowel loops and collapsed large bowel – probably distal ischemia with features of ileus and wedge shaped non enhancing area seen in lower pole of kidney –infarct as depicted in Fig-3. He was diagnosed with embolic occlusion of SMA, brachial artery and left renal artery and intestinal necrosis .patient underwent emergency laparotomy . Per operative finding revealed dilated small bowel loops and bowel gangrene for a length of 90 cm about 100cm from DJ flexure and 80cm from ileocaecal junction as depicted in Fig -1 for which patient underwent resection of small bowel with ostomy and mucus fistula . Anticoagulation with heparin was started after laparotomy. Post operative, ECHO was done which shows no feature for source of embolism. Arterial Doppler of all limbs reveal thrombosis of left brachial artery as seen in Fig-2 Nephrologist and vascular surgeon opinion was consulted.Both recommended conservative management. His creatinine level which was 1.5mg/dl on admission, rose to 2.5mg/dl and fell to 1.2 mg/dl by time of discharge.

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Figure 1. Shows intraoperative picture of bowel gangrene

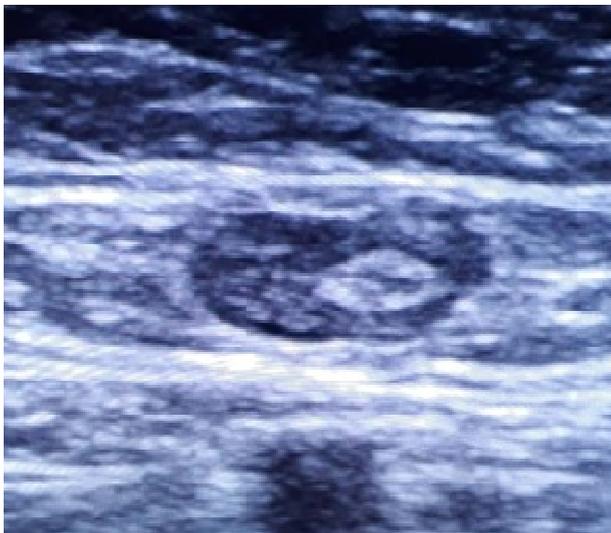


Figure 1. Shows doppler picture of left brachial artery thrombosis



Figure 3. Shows CT image revealing left lower pole renal infarct

Patient was discharged with advice on oral anticoagulation and plan for reversal in later period.

DISCUSSION

There are three major mechanisms of visceral ischemia involving the mesenteric arteries: (a) acute mesenteric ischemia, which can be either embolic or thrombotic in origin; (b) chronic mesenteric ischemia; and (c) nonocclusive mesenteric ischemia. Despite the variability of these syndromes, a common anatomic pathology is involved in these processes. The superior mesenteric artery (SMA) is the most commonly involved vessel in acute mesenteric ischemia. SMA Embolism are a major cause of acute mesenteric ischemia. Because of narrow take off angle from aorta, SMA is anatomically susceptible. Embolic episodes associated with SMA embolism can occur in brain, spleen, kidney, upper or lower limb. As we described in this report, an upper extremity embolism and renal infarct can occur secondary to an SMA embolism, although this is a rare event. Initial management of patients with acute mesenteric ischemia includes fluid resuscitation and systemic anticoagulation with heparin to prevent further thrombus propagation. Significant metabolic acidosis not responding to fluid resuscitation should be corrected with sodium bicarbonate (Lock *et al.*, 2001). A central venous catheter, peripheral arterial catheter, and Foley catheter should be placed for hemodynamic status monitoring.

The primary goal of surgical treatment in embolic mesenteric ischemia is to restore arterial perfusion with removal of the embolus from the vessel. The abdomen is explored through a midline incision, which often reveals variable degrees of intestinal ischemia from the mid-jejunum to the ascending or transverse colon. The transverse colon is lifted superiorly, and the small intestine is reflected toward the right upper quadrant. The SMA is approached at the root of the small bowel mesentery, usually as it emerges from beneath the pancreas to cross over the junction of the third and fourth portions of the duodenum. Once the proximal SMA is identified and controlled with vascular clamps, a transverse arteriotomy is made to extract the embolus, using standard balloon embolectomy catheters. Following the restoration of SMA flow, an assessment of intestinal viability must be made, and nonviable bowel must be resected. Several methods have been described to evaluate the viability of the intestine, which include intraoperative intravenous fluorescein injection and inspection with a Wood's lamp, and Doppler assessment of antimesenteric intestinal arterial pulsations. A second-look procedure should be considered in many patients and is performed 24 to 48 hours following embolectomy.

Upper limb emboli may be attributed to a variety of sources. Two-thirds of the cases are of cardiac origin, and Af is the usual etiology (Ketonen *et al.*, 1978). Obstructions have been found in the subclavian artery in 7–8 percent of patients, at the axillary level in 26–36 percent of patients, at the brachial level in 48–52 percent of patients, and distal to the elbow in 9–15 percent of patients (Kretz *et al.*, 1984; Vohra and Lieberman 1991). In our case, the obstruction was at the brachial artery level. Acute limb ischemia secondary to embolism is usually managed with embolectomy (Kretz *et al.*, 1984). In our case due to other morbidity, patient was managed conservatively with anticoagulation. Renal infarct is commonly believed to be an under-diagnosed cause of acute abdominal/flank pain. Most kidney infarction results from emboli caused by atrial

fibrillation or endocarditis, (Paris *et al.*, 2006) causing only partial occlusion of the renal artery or a branch. Reports of other causes associated with renal infarction include antiphospholipid antibody syndrome, (Paris *et al.*, 2006; Alamir *et al.*, 1997) cocaine use, and subsequent to carotid artery dissection, trauma, vasculitis, instrumentation, transplant, sepsis, (Kretz *et al.*, 1984) sickle cell disease (Kretz *et al.*, 1984; Tsai *et al.*, 2007). The most common presentation is abdominal pain / flank pain with new onset of hypertension. It is usually managed conservatively with adequate hydration, anticoagulation and antihypertension. Thrombolysis or thrombectomy is rarely needed.

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