

## Case Report

# Unusual Inferior Wall ST- Segment Elevation Myocardial Infarction

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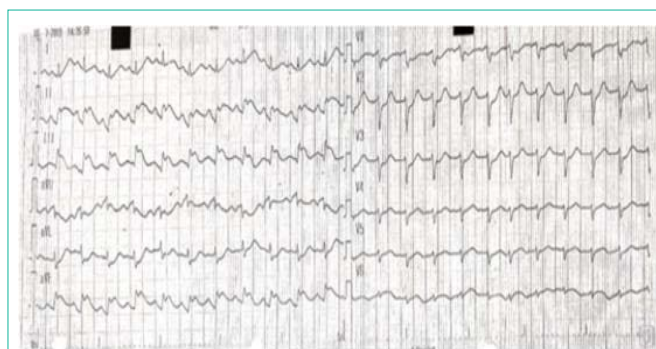
## Abstract

Patients presenting symptoms and electrocardiographic features consistent with ST-Segment Elevation Myocardial Infarction (STEMI) are conventionally diagnosed with acute myocardial infarction and are managed by primary percutaneous coronary intervention. However, it is important to remember that other potentially lethal illnesses might present similarly. Hence, cardiologists should be vigilant for these cases since prompt diagnoses and treatment may be lifesaving. We present a unique case of 43-year-old female patient presenting with chest pain and ECG compatible with inferior wall STEMI diagnoses, however coronary angiography showed patent vessels, and Ventriculography demonstrated unusual concavity of inferior wall. Further work up revealed bowel obstruction with volvulus pushing diaphragm against heart's inferior wall.

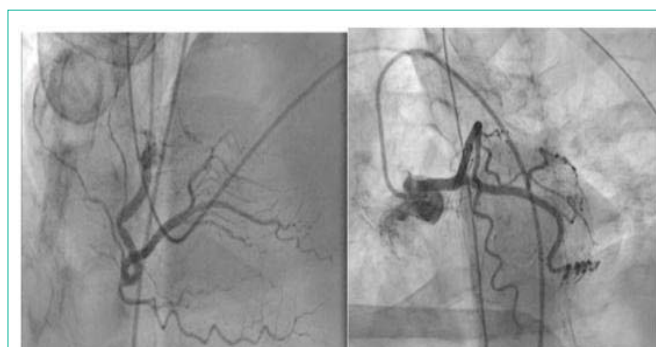
**Keywords:** STEMI, Normal coronaries; Bowel obstruction; Vulvulus

## Case Presentation

A 43-year-old female with a medical history of moderate mental retardation and recurrent colonic volvulus, necessitated total sigmoidectomy two years prior to her current admission. She was referred to the emergency room due to retrosternal pain, radiating to the chest starting 6 hours before admission. ECG showed ST-segment elevation in the inferior leads with reciprocal changes (Figure 1), suspicious for acute inferior STEMI. Physical examination demonstrated anxious but cooperative patient with stable hemodynamic and respiratory vitals, heart sounds were regular, no murmur heard, breathing sounds were normal, no rales or wheezing heard. The abdomen was tympanic and tender, but no peritoneal signs were present. Cath lab team was activated and primary percutaneous coronary intervention was scheduled. Loading doses of ticagrelor and aspirin, along with high potency statin, were given. Coronary angiogram, performed *via* right femoral artery, demonstrated normal coronary arteries without obstructive lesions (Figure 2). Cardiac Ventriculography demonstrated normal left ventricular function. However, concavity of inferior wall was noticed. Aortography showed no signs of acute aortic syndrome (Figure 3). The patient was admitted to intensive cardiac care unit. Laboratory showed hemoglobin 15 gr%, mild leukopenia 3.4  $\mu$ L/1000 creatinine 0.8 mg/dl, BUN 23 mg/dl, total bilirubin 1.3 mg/dl, AST, ALT and amylase were within normal range. High sensitive Troponin I 218 ng/l at admission, decreasing to 205 ng/l 5 hours later. Chest X-ray demonstrated normal cardiac silhouette without congestion, however, it was significant for severely dilated stomach and intestine (Figure 4). Abdominal Computed Tomography (CT) revealed dilated stomach and dilated small intestine, up to 5 cm with air-fluid interfaces and pneumatosis intestinalis, with air bubbles in portal system. No signs for mechanical obstruction or intestinal perforation were noticed. The patient was transferred to the surgical ward for urgent laparotomy. During the stomach procedure, small and large intestines were screened, partial volvulus of small intestine loop over adhesive band was found. Interruption of adhesions and surgical decompression of



**Figure 1:** ECG demonstrating sinus rhythm, with ST-segment elevation of inferior leads with reciprocal changes.

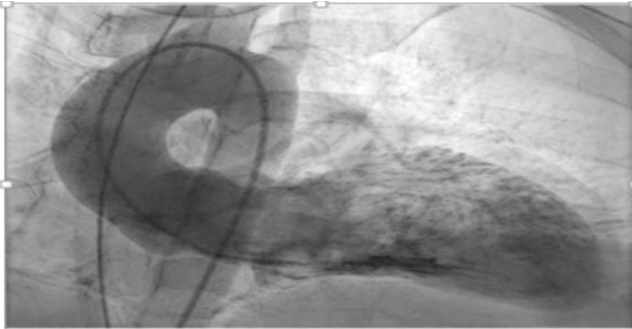


**Figure 2:** Coronary angiography *via* right femoral artery confirmed normal coronary arteries.

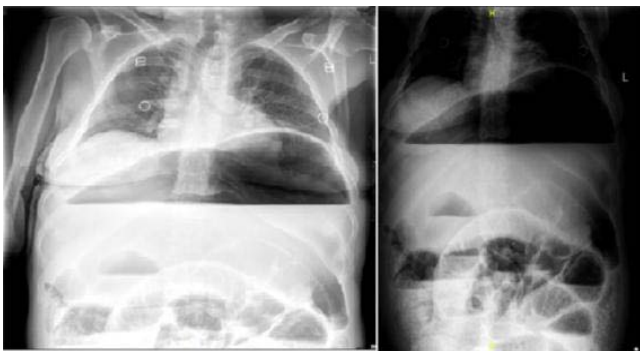
intestines were performed. Post-operative course was unremarkable. The patient was discharged on post-operative day 6.

## Discussion

Acute intra-abdominal pathologies presenting ECG changes consistent with STEMI is unusual. In one series of 820 patients



**Figure 3:** Cardiac Ventriculography.



**Figure 4:** Chest and Abdomen X-Ray consistent with intestinal pseudo-obstruction.

admitted with STEMI for primary PCI, only one patient has been diagnosed eventually with acute peritonitis [1]. There are only a few case reports of patients with significant hiatal hernia, ileus, gastric dilatation, pancreatitis and gastric volvulus, presenting with ST-

segment elevation and normal coronary arteries on angiogram [2-5]. One explanation to the ECG changes is the mechanical forces applied on the heart and changing of its axis [5]. What makes our case unique is the ventriculographic demonstration of heart's inferior silhouette being distorted by direct forces applied, by enlarged over distended bowel pushing diaphragm against inferior wall of heart and leading to ECG changes similar to what would classically represent STEMI. Whether ECG changes represent acute myocardial injury lead by direct compression of myocardium and disturbance of microcirculation, or secondary to pericardial irritation, or changing cardiac axes, is debatable. This is an unusual case in cardiology, where prompt reevaluation and exploration of life-threatening differential diagnoses in the setting of STEMI and patent coronary arteries could be lifesaving. In these uncommon cases, differential diagnoses should include intracranial pathologies, intra-abdominal pathologies, acute aortic syndrome and pulmonary embolism.

### References

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