

ACUTE PANCREATITIS COMPLICATED BY ACUTE ST-ELEVATION MYOCARDIAL INFARCTION- A CASE REPORT

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Abstract

Introduction: Acute pancreatitis complicated by acute ST-elevation myocardial infarction (STEMI) is a rare clinical entity. It poses a diagnostic and therapeutic challenge to emergency physician.

Case Report: We report a 86-year-old lady who presented with both chest and abdominal pain. Electrocardiogram showed acute anterior myocardial infarction and laboratory results showed acute pancreatitis with elevated amylase levels. The patient was hemodynamically unstable despite resuscitation. She succumbed to her condition whilst she was being treated in the emergency department.

Conclusion: Although there are established treatment guidelines for acute myocardial infarction and acute pancreatitis, it requires clinical judgement to ensure the treatment of one diagnosis does not worsen the condition of the other.

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Introduction

Acute pancreatitis is an inflammatory disease of the pancreas characterised by elevated levels of pancreatic enzymes. It can cause non-specific changes on the electrocardiogram, such as sinus tachycardia, QT prolongation and intraventricular conduction disturbances. Acute pancreatitis complicated by acute ST elevation myocardial infarction (STEMI) is extremely rare (1). The prognosis is very poor. We report a case of an 86 years old lady presented with both chest and abdominal pain, which eventually turned out to be acute pancreatitis and acute anterior STEMI. Consent was not obtained as there was no patient identifier.

Case Report

An 86-year-old Chinese lady presented to the Emergency Department (ED) with two days history of diarrhoea and one day history of severe right sided abdominal pain. Four hours prior to her ED visit, she also complained of severe chest pain. She is known to have diabetes mellitus, hypertension, hyperlipidemia and ischemic heart disease. She has no past surgical history. On presentation, she was hypotensive with a blood pressure of 83/48 mmHg. Clinically, she was diaphoretic and in distress due to severe abdominal pain. Cardiorespiratory examination was unremarkable. The abdomen was distended with no tenderness or guarding. Digital rectal examination was normal. 12-

lead ECG (Figure 1) showed right bundle branch block with ST-segment elevation in leads V2, V3 and reciprocal ST-segment depression in leads III and aVF. A bedside ultrasonography of the abdomen revealed no free fluid. The aorta and inferior vena cava was not well visualised due to presence of bowel gas. Abdominal X-ray (Figure 2) showed dilated small and large bowel loops. Venous blood gas showed metabolic acidosis. Point-of-care test (POCT) Troponin I was elevated at 3.98ug/L (reference range 0.00 – 0.50ug/L). Based on the preliminary investigations, the patient was diagnosed with anterior STEMI and intestinal obstruction due to bowel ischemia. The patient was referred to the cardiology registrar and general surgeon on-call for review in the resuscitation room. The patient was persistently hypotensive despite 500mls of intravenous crystalloid resuscitation, as well as intravenous inotropic support. Thirty minutes after arrival at ED, the patient collapsed with pulseless electrical activity. She was intubated and cardiopulmonary resuscitation (CPR) was commenced. She failed to respond to resuscitation effort after 10mg of intravenous adrenaline and thirty three minutes of CPR. Posthumously, laboratory results (Table 1) revealed elevated serum amylase level with transaminitis, consistent with a diagnosis of acute pancreatitis.

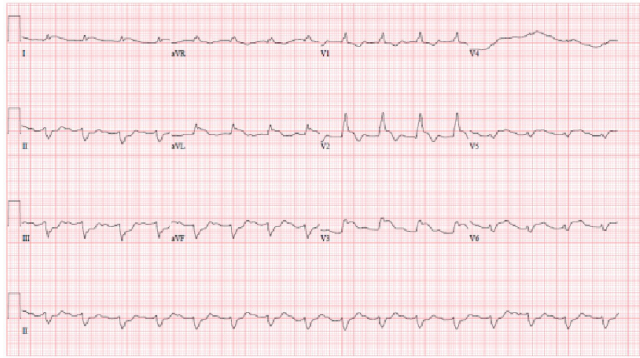


FIGURE 1. 12-lead ECG showing anterior STEMI

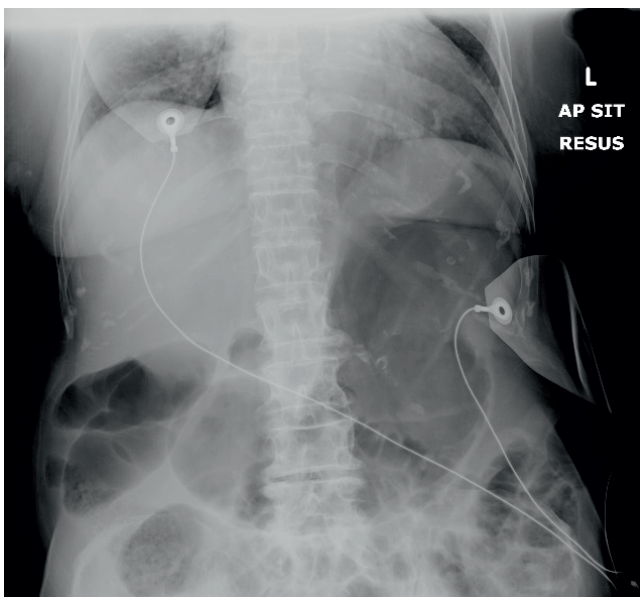


FIGURE 2. Abdominal X-ray showing dilated small and large bowel loops

Discussion

Cardiovascular complications of acute pancreatitis include shock, hypovolaemia, pericardial effusion and non-specific ST-T changes (2). Acute pancreatitis complicated by acute STEMI is extremely rare. The prognosis is very poor, and multi organ dysfunction is common (1). There are a few hypotheses to explain the relationship between ECG abnormalities or myocardial injury and acute pancreatitis, which includes: [1] vagally mediated reflexes (cardiobiliary reflex) (2,3); [2] electrolyte abnormalities, such as hypokalaemia, hypocalcaemia, hyponatraemia (2); [3] toxic effects of pancreatic proteolytic enzymes on myocardium – trypsin can change platelet adhesiveness, influence the coagulation system and lead to coronary thrombosis (5); [4] coronary artery spasm (3); [5] haemodynamic instability and /or systemic inflammatory response

(SIRS) induces cardiac damage such as severe sepsis or septic shock (3); and [6] prothrombotic derangement (3). With regards to the case in question, the most likely cause of the haemodynamic instability was SIRS from acute pancreatitis given that she had right sided abdominal pain one day earlier before she developed severe chest pain. Profound hypotension may diminish coronary artery perfusion causing ischaemia, leading to ECG changes, especially in patient with underlying coronary artery disease (2). SIRS as a complication of acute pancreatitis may also explain the hypotension. Such rare presentation posed both a diagnostic and therapeutic challenges to the emergency physician. There are no standard guidelines for management for such clinical entity due to its rarity. Initial management of acute pancreatitis should be intensive non-operative treatment. Early aggressive intravenous hydration should be started for all patients unless contraindicated (4). In the context of patient with concurrent STEMI, intravenous hydration should be initiated judiciously as the patient may develop complications such as acute pulmonary oedema or congestive cardiac failure. Intravenous antibiotics for infected pancreatic necrosis may be useful in delaying intervention (4). In terms of the intervention for STEMI in this setting, primary percutaneous angioplasty instead of thrombolytic therapy is preferred due to the higher bleeding risk of the latter. It is advisable to do balloon angioplasty instead of deploying a stent after thrombus suction by catheter (2). This is because stenting will require dual antiplatelet therapy, and this may increase peri-operative risk of bleeding if acute pancreatitis requires surgical treatment in the near future. It may be advisable to start patient on single antiplatelet therapy at the initial period. Only when it is decided that acute pancreatitis does not require surgical treatment, should the patient be commenced on dual antiplatelet therapy.

TABLE 1. Laboratory results

Blood test	Results	Reference Interval
Bilirubin, Total	16 umol/L	7 – 31 umol/L
ALT	184 U/L	14 – 54 U/L
AST	422 U/L	15 – 41 U/L
ALP	97 U/L	38 – 126 U/L
GGT	74 U/L	7 – 50 U/L
Amylase	1271 U/L	36 – 128 U/L

Conclusion

Acute myocardial infarction and acute pancreatitis are

both commonly seen conditions in ED. However, when both conditions occur concurrently, it is challenging for the emergency physician to ensure the treatment of one condition does not worsen the condition of the other.

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