

## Case Report

# Acute pancreatitis complicated by spontaneous unilateral adrenal hemorrhage

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## ABSTRACT

A 52-year-old lady with a history of hypertension, dilated cardiomyopathy and diabetes mellitus type 2, presented with severe upper abdominal pain and vomiting of 4 hours duration. Acute pancreatitis was diagnosed based on high serum amylase and an abdominal computerized tomography scan. On the 3rd day she developed fever, increasing abdominal pain and shortness of breath. A repeated computerized tomography scan showed severe pancreatic necrosis and right adrenal hemorrhage.

**Keywords:** Acute necrotizing pancreatitis, adrenal hemorrhage, drug related.

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Adrenal hemorrhage has been described in a variety of clinical conditions: the postoperative period, the antiphospholipid-antibody syndrome, in heparin-associated thrombocytopenia, or in the setting of severe physical stress and multi-organ failure.<sup>1</sup> Rao<sup>2</sup> reported that the concurrent medical conditions most commonly associated with adrenal hemorrhage were severe infections and cardiac problems. Isolated cases of adrenal hemorrhage have been reported in association with a variety of other diseases that have nothing in common other than the patients being seriously ill.<sup>3</sup> Acute necrotizing pancreatitis imposes severe stress with release of mediators of the systemic inflammatory response syndrome. This case highlights the need to consider adrenal hemorrhage in severe acute pancreatitis when there is clinical or biochemical deterioration, since timely diagnosis and management is of paramount importance.

**Case Report.** A 52-years-old female presented with a history of 4 hours of severe dull aching upper

abdominal pain and repeated vomiting, no hematemesis, fever or diarrhea. She gave no history of alcohol intake. She was known to have hypertension, cardiomyopathy, diabetes mellitus type 2 and hypercholesteremia for which she was taking Enalapril, Furosemide, Digoxin, Glibenclimide and Metformin. Clinical examination revealed a blood pressure of 160/90 mmHg, pulse 120/min, respiratory rate 20/min and temperature 36.9°C. She had tenderness and guarding in the upper abdomen. The rest of examination was unremarkable. Chest x-ray showed cardiomegaly and electrocardiogram showed sinus tachycardia. Laboratory investigations revealed: White blood cells  $13.3 \times 10^3/\text{mm}^3$ , Hemoglobin 14.8g/dl Platelets  $184 \times 10^3/\text{mm}^3$ , Platinum 18.2 sec international normalization ratio (INR) 1.3, partial thromboplastin time (PTT) 34.3 sec, ransom blood sugar (RBS) 28.3mmol/L, blood urea nitrogen 7.1mmol/L creatinine 101mmol/L, sodium 138 mmol/L, potassium 4.5mmol/L, Confidence Intervals 99 mmol/L, calcium 2.21mmol/L, bicarbonate ( $\text{HCO}_3$ ) 21mmol/L, serum

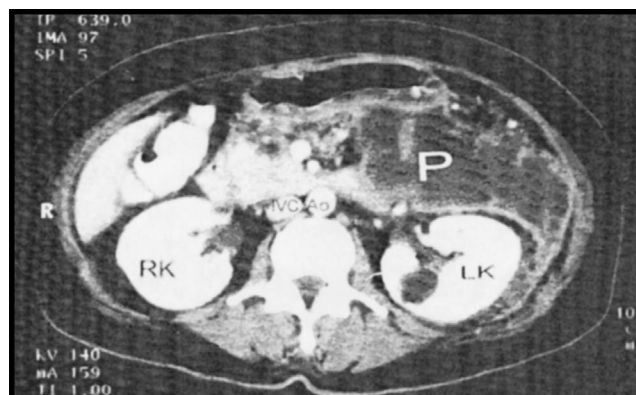
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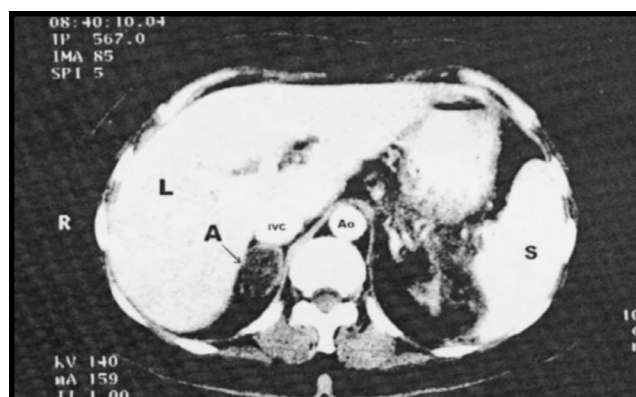
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ketone was negative, serum triglyceride 4.51mmol/L (0.45-1.81), serum amylase was 1150U/L, and anti-nuclear antibodies and anticardiolipin antibodies were negative. Abdominal computerized tomography (CT) scan showed acute pancreatitis. She was managed with intravenous fluids and analgesics. Ultrasound of the abdomen showed no gallstones and a normal common bile duct. Acute pancreatitis was presumed to be drug related (Enalapril or Furosemide). On the 3rd day the patient developed fever and difficulty in breathing with increasing abdominal pain. She was dyspneic with a blood pressure of 150/90 mmHg, pulse 120/min, respiratory rate 24/minute and temperature 38.5°C. Chest auscultation revealed bilateral crepitations. The abdomen was tender with epigastric fullness. Chest x-ray showed bilateral pulmonary edema. Her serum electrolytes were normal and arterial blood gas showed hypoxia with an oxygen saturation of 85%. Blood cultures were negative. Repeated CT scan showed severe necrotizing pancreatitis with peri-pancreatic edema and fluid collection (**Figure 1**) and right adrenal hemorrhage (**Figure 2**). Serum cortisol level was 1200 nmol/L. She was started on intravenous Imipenem and her abdominal pain and fever settled by the 7th day. An abdominal CT scan after 8 weeks showed resolution of the right adrenal hemorrhage.

**Discussion.** Adrenal hemorrhage is a potentially lethal entity that is increasingly being recognized and reported as a complication occurring in the course of a variety of illnesses.<sup>3</sup> Adrenal hemorrhage can complicate many conditions: sepsis, traumatic shock, coagulopathies, ischemic disorders and other situations associated with severe stress. Although the diagnosis of adrenal hemorrhage is made infrequently while the patient is alive, appropriate imaging techniques are useful for establishing a timely diagnosis. In severe physical stress or sepsis, adrenal hemorrhage may be a marker of severe preterminal physiologic stress and poor outcome.<sup>1</sup> Most of the factors predisposing to adrenal hemorrhage in situations of severe stress are related to high corticotropin release, which produces a dramatic rise in adrenal blood flow. This may exceed the limited venous drainage from the adrenal, leading to stasis and adrenal hemorrhagic necrosis.<sup>4</sup> Acute pancreatitis imposes severe stress with release of mediators of the systemic inflammatory response syndrome that may lead to multi-organ failure. Our patient had multiple clinical conditions that put her under severe stress. She had hypertension, diabetes mellitus and dilated cardiomyopathy with poor left ventricular function. She had severe pancreatitis as per clinical criteria and CT scan finding. On the 3rd day she developed fever and increasing abdominal pain. Follow up CT scan of the abdomen showed the



**Figure 1** - Computerized tomography scan abdomen with intravenous contrast shows necrotizing pancreatitis with peri-pancreatic edema and fluid collection, RK - right kidney, LK - left kidney, P - pancreas, IVC - inferior vena cava, AO - aorta.



**Figure 2** - Computerized tomography scan abdomen with intravenous contrast shows right adrenal hemorrhage (arrow). L - liver, A - right adrenal gland, S - spleen, AO - aorta, IVC - inferior vena cava.

development of unilateral right adrenal hemorrhage. She had no clinical or biochemical signs of adrenal insufficiency although a case of insufficiency has been described in which abdominal CT demonstrated unilateral hemorrhage.<sup>5</sup>

The clinical presentation of adrenal hemorrhage is often vague and indolent in the majority of cases.<sup>2</sup> In the pre-crisis interval patients present with a combination of pain in the chest, back, or abdomen, fever, nausea or vomiting; neuropsychiatric manifestations such as confusion, weakness, or obtundation, and less frequently, hypotension. Laboratory features include a significant drop in the hemoglobin and adrenal insufficiency that often take several days to develop.<sup>6</sup> Abdominal pain, presumably resulting from the distention of the adrenal capsule, is a prominent feature in most patients with severe adrenal hemorrhage.<sup>7</sup>

In these patients, unexplained clinical deterioration or the appearance of findings consistent with

adrenocortical insufficiency mandate measurement of serum cortisol concentration and the institution of stress-level corticosteroid replacement therapy until a diagnosis of acute adrenocortical insufficiency can be established or refuted.<sup>8</sup> Our patient had stress levels of cortisol and did not need further confirmatory test by ACTH stimulation test.

This case demonstrated that a high index of suspicion is needed in case of clinical deterioration in patients with acute pancreatitis, as well as in other conditions that are associated with severe stress.

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