



Bilateral adrenal haemorrhage presenting as epigastric and back pain

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DECLARATIONS

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Sarika Deshpande

This case demonstrates a rare cause of adrenal insufficiency, bilateral adrenal haemorrhage, which presented as abdominal and back pain.

Introduction

'General languor and debility, feebleness of the heart's action, irritability of the stomach, and a peculiar change of the colour of the skin' – forms part of the original description of Addison's disease, primary hypoadrenalism.¹ The condition represents a diagnostic challenge for the clinician, a non-specific pattern of presentation notoriously difficult to identify, that follows a potentially fatal course. Data on the occurrence of spontaneous bilateral adrenal haemorrhage is sparse though it is becoming increasingly recognized. The case and corresponding literature are discussed to highlight the risk factors and clinical presentation of the condition.

Case report

An 84-year-old man was discharged from hospital following an admission for cellulitis of his left calf treated with a 10-day course of clindamycin. The following day he returned to hospital with acute onset abdominal and back pain. The pain had started during the night, and was not associated with vomiting or gastrointestinal disturbance. His co-morbidities included atrial fibrillation, congestive cardiac failure, ulcerative colitis, type 2 diabetes mellitus and antiphospholipid syndrome with a past history of recurrent deep vein thromboses; he was receiving maintenance warfarin therapy. On examination he was apyrexial, BP 200/132, HR 68, BM 9.1, chest was clear, there

was mild to moderate epigastric tenderness with normal bowel sounds and mild resolving cellulitis of the right calf. Admission blood tests showed Hb 10.3, WCC 12.9, Plts 303, INR 6.8, Ur 8.7, Cr 111, Na 144, K 4.1, CRP 75, Ca 2.02. Electrocardiogram demonstrated a paced rhythm and chest X-ray was consistent with slight fluid overload, cardiomegaly and interstitial shadowing. The initial impression was possible gastro-oesophageal reflux disease. However tenderness was a prominent feature on examination, and in view of his co-morbidities it was important to rule out sepsis or malignancy.

Warfarin was withheld, vitamin K administered, and intravenous fluids given. A CT of the chest, abdomen and pelvis was performed (Figure 1) which revealed subtle, non-specific bilateral adrenal enhancing lesions, the differential diagnosis for which included metastases, infection, granulomatous disease or haemorrhage. By now the INR had normalized to the target of 2–3, however he had ongoing abdominal pain, nausea and lethargy. He was hypotensive, with abdominal distension and normal BMs despite diabetic medication having been withheld. Response to a synacthen test was flat: Time 0, 95 nmol/L; Time 60 min, 113 nmol/L; Time 90 min, 132 nmol/L. A CT with adrenal protocol was performed to better characterize the lesions (Figures 1 and 2) and confirmed the diagnosis of bilateral adrenal haemorrhage. Adrenal hormone replacement therapy with hydrocortisone (20/10/10 mg) was commenced, anti-glycaemic agents withheld, and bowel movements were closely monitored. He showed a good response to this therapy, although his diabetic and warfarin control needed ongoing review. Management of the haemorrhage was conservative.

Figure 1
CT of the abdomen, chest and pelvis. Arrows highlighting the bilateral adrenal masses



Figure 2
CT adrenals. Bilateral adrenal masses are seen (arrows), unchanged in appearance since the previous scan. These both contain areas of high density (around 60 HU) with no contrast enhancement seen in either adrenal mass. Appearances are in keeping with bilateral adrenal haemorrhage



Discussion

Bilateral adrenal haemorrhage has traditionally been considered a postmortem diagnosis,^{2,3} with data suggesting a prevalence of 1.1% in hospital postmortems.⁴ Despite a relatively thin literature, available evidence suggests an inadequate rate of detection combined with an unfavourable outcome when untreated. More recently, it has been estimated that the incidence is 4.7–6.2 per million in developed nations.⁵ The availability of imaging, and to a lesser extent increasing use of synacthen tests, increasingly highlights this diagnosis. There are several case reports of bilateral adrenal haemorrhage being an incidental finding.³ It is also notable that it may frequently be overlooked on imaging.

The pathophysiology of bilateral adrenal haemorrhage is poorly understood, and existing case reports suggest that it may represent a multifactorial aetiology.⁶ It is most frequently seen as a consequence of trauma, including iatrogenically due to extracorporeal shock-wave lithotripsy or electroconvulsive therapy.^{7,8} Spontaneous bilateral adrenal haemorrhage is associated with a range

of conditions (Table 1), of which the most frequently recognized are adrenal neoplasia and sepsis. The latter is well-known as Waterhouse-Friderichson's syndrome, associated with meningococcal septicaemia.

Additional predisposing factors include those that render the adrenals susceptible to damage, including chronic steroid use, factors that predispose to bleeding or thrombosis, and factors that put the body in a state of stress, such as sepsis, exogenous ACTH, surgery, hypovolaemia, burns.^{1,3,6} Existing theories to explain the pathophysiology include intense strain on the adrenals.⁹ This is hypothesized that the adrenals may be particularly vulnerable due to the anatomy of their vascular supply, coupled with the factors described above.⁶ There are numerous arteries supplying the adrenals, and only one vein. An increase in blood flow into the kidney with (or without) reduced outflow through (for example) thrombosis of the vein could result in increased pressure in the adrenals and subsequent haemorrhage.

In this case report, the history of antiphospholipid syndrome, steroid therapy for ulcerative colitis

Table 1
Risk factors for non-traumatic bilateral adrenal haemorrhages^{1,3,6,9}

Neoplasia – cyst/malignant – myoleiosarcoma, phaeochromocytoma
Sepsis – Waterhouse-Friderichson
Coagulopathies – antiphospholipid syndrome; HIT; anticoag – Warfarin/heparin/aspirin/ chronic NSAID use; essential thrombocytosis/ thrombocytopenia
Adrenal aneurysms
Prior steroid use/ known adrenal insufficiency
ACTH administration
Pancreatitis
Stress
Postsurgery (anti-coagulation, intraoperative, hypovolaemia and pre-existing adrenal insult/ insufficiency, commonly following chronic steroid use)
Burns
Pregnancy, including pre-eclampsia and acutely postpartum
Hypertension

and warfarin therapy are all likely to have played contributory roles. Antiphospholipid syndrome involves aberrant coagulation, and an association with bilateral adrenal haemorrhage has been previously described.¹⁰ Bilateral adrenal haemorrhage may represent a first presentation of antiphospholipid syndrome.¹⁰ The association with ulcerative colitis is also previously documented, although this is frequently during ACTH treatment or long-term steroid therapy.^{3,6} The role of Warfarin is a significant finding in view of the current practice of routine anti-coagulation, and the extensive use of Warfarin. Several case reports have suggested a role for anticoagulation following surgery contributing to bilateral adrenal haemorrhage.¹¹ In these cases bilateral adrenal haemorrhage usually occurred in the context of another postoperative complication such as sepsis or hypovolaemia.

In terms of the clinical presentation in this case, relevant findings included abdominal pain, and then the onset of lethargy, anorexia, hypotension and normoglycaemia in a known diabetic

despite stopping anti-glycaemic therapy. The classic non-specific nature of the symptoms was further confounded by numerous co-morbidities. It was fortunate that a careful review of the images identified the bilateral adrenal lesions. It further emphasizes the role of a low threshold for clinical suspicion, using a synacthen test as the first line investigation, followed by a CT with adrenal protocol. It is often necessary to cover empirically with glucocorticoids while investigations are pending.⁶ Surgical management is rare, and is only needed in cases in which there is ongoing bleeding.⁸ There is a need for clinicians to be aware of the clinical presentation of this potentially life-threatening but readily treatable condition.

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