Case Report

Hepatic aneurysm and portal vein thrombosis in a patient with lupus erythematosus on dialysis

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Introduction

Hepatic aneurysm [1–5] or hepatic rupture [6], are rare complications in patients with systemic lupus erythematosus (SLE). Most cases are associated with vasculitis and result in catastrophic outcomes. Portal vein thrombosis has been noted in a few cases with SLE and either anti-phospholipid syndrome [7–9] or acquired defects of fibrinolysis [10], but the simultaneous occurrence of portal vein thrombosis and hepatic aneurysm has not been reported. In addition, there have been no reports to date of hepatic aneurysm or rupture in SLE patients with uraemia. We observed a uraemic patient with underlying SLE who had fatal hepatic aneurysm rupture with portal vein thrombosis. The diagnosis was delayed because oesophageal varices were thought to be responsible for the bleeding. In this patient, SLE led to portal vein thrombosis and hepatic aneurysm although lupus activity is usually reduced once the patient is uraemic.

Case

A 31-year-old woman was admitted in February 1998 because of sacral herpes zoster and upper gastrointestinal (GI) tract bleeding. SLE developed 10 years prior to this admission with polyarthritis, thrombocytopenia, positive anti-nuclear antibody [1:2560 (+)], elevated anti-double-stranded DNA (108.73 IU/ml, normal <7) and nephritic syndrome. Rapid, progressive renal failure occurred 3 years earlier. The renal histology revealed class IV + VI lupus nephritis which was characterized by an increment in cellularity and matrix with 55% obsolete glomeruli as well as 50% tubular atrophy and interstitial fibrosis. An immunofluorescence study showed granular subepithelial and subendothelial deposition of IgG, C3 and C1q. Haemodialysis was commenced despite vigorous steroid and cyclophosphamide pulse therapy. Prednisolone, 40 mg every other day, was continued during the following 3 years for persistent SLE activity presenting with pancytopenia, elevated anti-double-stranded DNA and prolonged mild fever without evidence of infection. An episode of tarry stool caused by superficial gastritis occurred 6 months prior to this admission; no evidence of oesophageal varices was noted at that time. Three days prior to the present admission, sacral herpes zoster developed and the patient took some analgesics as well as oral acyclovir. Haematemesis and tarry stool followed by drowsiness occurred 2 days later.

On admission, physical examination revealed a high fever of up to 38.9°C and unconsciousness. The neck was supple without meningeal signs. Some vesicles and crusted papules on erythematous bases were noted on the medial surface of the left thigh. Other physical findings were unremarkable. The laboratory data included: white cell count, 6.9×10⁹/l; haemoglobin, 4.9 g/dl; platelet count 84×10⁹/l, serum transaminase AST, 0.65 μkat/l; alanine transaminase (ALT), 0.65 μkat/l; blood urea nitrogen, 36.1 μmol/l; creatinine 972 μmol/l and ammonia 94 μmol/l. The prothrombin time was 15.9 s (control, 12.6 s) and the activated partial thromboplastin time was 61.5 s (control, 35 s). Computed tomography (CT) of the brain revealed negative findings but the spinal fluid yielded pleocytosis (89×11.9/mm³) with lymphocytes predominant (lymphocyte:neutrophil = 77:12). Acyclovir and component therapy were given intravenously; the patient recovered consciousness as the ammonia declined to 8.2 μmol/l 3 days later. The vesicles became crusted over the following days and acyclovir was continued for 14 days. GI bleeding ceased on the second day of hospitalization, and endoscopy revealed esophageal varices with red color signs which were thought to be the sources of bleeding. Assays for both hepatitis B surface antigen and anti-HCV antibody were negative. Presinusoidal portal hypertension was suspected.
because abdominal sonography showed moderate splenomegaly and massive ascites without evidence of liver cirrhosis. The IgG anti-cardiolipin antibody with an ELISA method was 3.46 IU/ml (normal < 30 IU/ml), and the lupus anticoagulant with dilute Russell’s viper venom time test was also negative. Other serological studies included anti-double-stranded DNA, 25.14 IU/ml (< 7 IU/ml); anti-nuclear antibody, 1:40 (+); C3, 0.58 g/l (0.55–1.20 g/l); C4, 0.11 g/l (0.20–0.50 g/l) and varicella-zoster virus antibody, 1:8 (+), paired serum samples were not obtained.

One week after ceasing acyclovir, massive GI bleeding recurred. The serum ammonia level increased to 99.8 μmol/l and the patient became unconscious. Emergent endoscopy showed no evidence of active bleeding in the esophagus or stomach, with the exception of some blood clots which had accumulated in the stomach. Celiac arteriography showed several hepatic pseudoaneurysms in the right lobe of liver with contrast medium extravasation and absence of the main portal vein. (Figure 1). Abdominal CT revealed hemoperitoneum and portal vein thrombosis (Figure 2). Embolization was performed despite of the risk of hepatic failure because hypovolemic shock ensued. Contrast medium extravasation persisted after embolization. The patient died 1 day later despite vigorous substitution of plasma components.

Discussion

While both meningoencephalitis and hepatic encephalopathy may have been involved in the consciousness disturbance in our patient, several factors indicate that hepatic encephalopathy was the most likely cause. In retrospect, the impairment of consciousness fluctuated in parallel with ammonia levels. In addition, the patient was predisposed to hepatic encephalopathy owing to the poor liver reserve caused by portal vein thrombosis. Moreover, there was no evidence of recurrent meningitis in the second episode of GI bleeding accompanied by consciousness disturbance.

Although hepatic aneurysm is common among patients with polyarteritis nodosa, there are only six reported cases in SLE patients [1–6]. The clinical characteristics of these patients and the present case are summarized in Table 1. All patients died soon after diagnosis, except the two male patients. Maintenance steroid therapy was required in five patients just prior to the diagnosis of hepatic aneurysm or rupture. Patient 5, in whom rupture of the aneurysm was confined to the left hepatic lobe, was successfully managed with embolization. In patient 2, angiography was performed for retroperitoneal haematoma and revealed a hepatic aneurysm without rupture. The common manifestations are abdominal pain, shock and haemoperitoneum. Only our patient presented with haemobilia caused by aneurysm rupture. GI bleeding is common in uraemia mostly because of peptic ulcers, gastritis and angiodysplasia, but haemobilia, although rare, is one possibility that was considered in this patient. It is difficult to diagnosis and treat. Angiography was the only diagnostic modality capable of revealing and managing the aneurysms before surgery.

Several hypotheses had been advanced to explain aneurysm formation in SLE. Fibrinoid degeneration of collagen, and destruction of medial smooth muscle cells and elastic fiber caused by arteritis may facilitate aneurysm formation [1,11]. In addition, steroids may play a role in inducing medial necrosis by disintegrating connective tissue of the tunica media [12]. In our patient, persistent lupus activity necessitated maintenance steroid therapy even after the initiation of haemodialysis; both the SLE-related arteritis and the steroid...
therapy were associated with the formation of hepatic aneurysm with consequent rupture.

Other causes of aneurysm formation (all of which can be excluded in our case) include drug abuse, hypersensitivity angiitis, septic emboli, metastatic atrial myxoma, Wegener's granulomatosis, Wilms' tumour and graft rejection [5]. Our patient had sacral herpes zoster with possible herpes meningoencephalitis, but there is no evidence that viraemia can result in aneurysm formation. Lupus-related hepatic aneurysm was therefore the most likely cause.

In managing our patient, endoscopy-revealed oeso-
Table 1. Clinical characteristics of SLE patients with hepatic aneurysm/rupture

<table>
<thead>
<tr>
<th>Patient (reference)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td>Duration of SLE (years)</td>
<td>6</td>
<td>4</td>
<td>&gt;3</td>
<td>12</td>
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<td>14</td>
<td>10</td>
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<tr>
<td>Steroid Presentation</td>
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<td>No</td>
<td>Yes</td>
<td>NA</td>
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<td>Yes</td>
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<td>Lapa</td>
<td>Lapa</td>
<td>CT</td>
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<td>Management Outcome</td>
<td>Transfusion</td>
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<td>Lobectomy</td>
<td>Embolization</td>
<td>Lobectomy</td>
<td>Embolization</td>
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<td>Survived</td>
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Abbreviations: Abd, abdomen; Angio, angiography; CT, computed tomography; GI, gastrointestinal tract; Lapa, laparotomy; NA, not available.

*See text for detailed description; †present case.

phageal varices secondary to portal vein thrombosis were thought to underlie the two episodes of GI bleeding, because celiac arteriography (Figure 1) and abdominal CT (Figure 2) had shown obvious portal vein thrombosis in our patient. This led to delay in establishing the definite diagnosis. The antiphospholipid syndrome has been shown to be involved in the pathogenesis of portal vein thrombosis in some cases of SLE [7–9], but in our patient, the anticardiolipin antibody was within the normal range and the lupus anticoagulant was negative. Acquired defective fibrinolysis was also proposed as a cause in another SLE patient with portal vein thrombosis [10]. Although a fibrinolytic function test was not performed, we consider defective fibrinolysis to be a potential cause of portal vein thrombosis in this patient. The presence of cavernous formation of the portal vein (Figure 2) indicates a long-standing course of portal vein thrombosis and this can explain the poor liver reserve in the absence of liver cirrhosis. Poor liver function also explained the prolonged activated partial thromboplastin time and prothrombin time in this patient.

In conclusion, we have described a case of catastrophic hepatic aneurysm rupture in a patient with SLE-related end-stage renal disease. Identification of the bleeding source was delayed due to the presentation of varices caused by portal vein thrombosis. Smoldering SLE was presumably the sole cause of the problem occurring in this patient. While lupus activity generally declines when patients become uremic, this is not always true as demonstrated by our patient. We recommend that haemobilia and variceal bleeding should be considered in SLE patients with GI bleeding. Angiography and embolization should be considered, if the endoscopy reveals no evidence of variceal or ulcer bleeding.

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References


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