

Intracranial Aneurysm with Systemic Lupus Erythematosus Treated by Endovascular Intervention

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ABSTRACT

Systemic lupus erythematosus (SLE) is a chronic disease with multiple pathologies that can affect every organ system of the body including central nervous system. Intracerebral aneurysms and subarachnoid hemorrhage (SAH) are one of comparatively rarer manifestations of central nervous system SLE. Here we present a case of known SLE complicated by the rupture of intra cerebral aneurysm at basilar artery tip which was successfully treated with endovascular coiling.

Key Words: *cerebral aneurysm, endovascular surgery, SAH, SLE*

INTRODUCTION

Systemic lupus erythematosus (SLE) is a chronic and systemic disease that affects every organ including CNS. CNS is involved in approximately 40% of all SLE patients with wide range of neuro-psychiatric symptoms.^{1,2} The

main underlying pathology of intracranial (IC) aneurysm and its rupture is lupus vasculitis and fragility of blood vessels due to prolonged use of steroid. Though aneurysms are successfully clipped, these patients often have complications of SLE. Though cases with SLE and

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SAH and/or IC hemorrhage due to IC aneurysms have been occasionally reported,³⁻⁶ it is one of the rare presentations of SLE,⁷ the incidence of which is thought to be less than 4%.⁸

Here we present a case of SLE complicated by the rupture of IC aneurysm which was successfully treated by endovascular coiling. We emphasize the occurrence of IC aneurysm in SLE and the importance of endovascular treatment in such cases.

CASE REPORT

A 48-year-old woman was admitted to our hospital who presented with sudden and severe headache and disturbance of consciousness. The patient was a known case of systemic lupus erythematosus (SLE) and was on regular treatment with steroid for fifteen years. She was semiconscious without any significant neurological deficit at the time of presentation. Computed Tomography (CT) revealed subarachnoid hemorrhage (SAH) in the basal cistern. Hunt and Hess grade for SAH was 3. Digital subtraction angiogram revealed the aneurysm of the basilar artery (BA) tip (Figure 1). Endovascular treatment was performed on the same day to prevent repetitive hemorrhagic event.

A 5-French ENVOY guiding catheter (Cordis, Miami, FL) was inserted in the proximal right vertebral artery via a right femoral artery under local anesthesia. The patient was anticoagulated by the intravenous injection of 2.5 mg argatroban. An Excelsior SL10 microcatheter (Boston Scientific, Natick, MA) using a 0.012-inch GT-wire (Terumo, Tokyo, Japan) was then navigated into the BA tip aneurysm. The aneurysm was completely obliterated using several detachable coils (Figure 2). No new neurological symptoms appeared after endovascular surgery. Postoperative magnetic resonance (MR) imaging revealed no ischemic lesions of the brain and the patient was discharged from the hospital.

DISCUSSION

The basic underlying pathology of SLE is the autoimmune disorder which induces systemic microvascular inflammation. Frequently reported neuro-psychiatric manifestations are complex migraine, movement disorder, encephalitis due to vasculitis, neuropathy, seizure disorder, mood disorder, cognitive disorder, psychosis, delirium etc. Histological study often shows transmural arteritis

suggesting SLE origin.³ IC aneurysm and SAH are other neurological complications of SLE. The greater frequency of SAH in patients with SLE, as compared to the general population, has been attributed to the presence of intracranial vasculitis. Underlying vasculopathic changes of small arterioles and veins in SLE can also lead to spontaneous IC hemorrhage, without aneurysm or any other causative factor, as has been reported earlier.⁴ Pathological study of SLE associated IC aneurysms often shows transmural angitis, fibrinoid necrosis, elastic tissue disruption and infiltration of inflammatory cells.⁴ Though CNS involvement in SLE is not uncommon, primary SAH with underlying intracranial aneurysm is a relatively rare entity.⁷ The nature of IC aneurysms with SLE is different from that of a isolated IC aneurysm in terms of several aspects. SLE is more commonly associated with multiple IC aneurysms and the patients are usually younger. Similarly, peripheral smaller vessels are more commonly involved, and fusiform aneurysm occurrence is also more common in SLE. Rare location of aneurysm, like lenticulostriate artery, is another feature of IC aneurysm in SLE. Because of systemic illness and multiplicity of lesion, the overall prognosis of IC aneurysm and SAH associated with SLE is poorer than that of isolated IC aneurysm. In case of SLE, only about half of the cases can undergo surgery due to systemic complications and more than half of those who undergo surgery die due to other complications. Surgical intervention for the treatment of IC aneurysm can complicate the situation, especially due to bleeding tendency in SLE, or other way round, surgery may not be feasible due to multi-systemic complications. In such cases, surgery has to be delayed which can lead to re-rupture and re-bleed. Most of the literatures have reported that delayed surgical intervention was performed due to unsuitable clinical condition of patient. As a result, many of them had worse outcome due to SLE pathology and SAH. However, our patient had a favorable outcome with early endovascular treatment for the ruptured aneurysm and with appropriate medical treatment for the accompanying SLE. Therefore, early endovascular coil embolization is worth consideration among different treatment options in these conditions as has been reported earlier.⁹

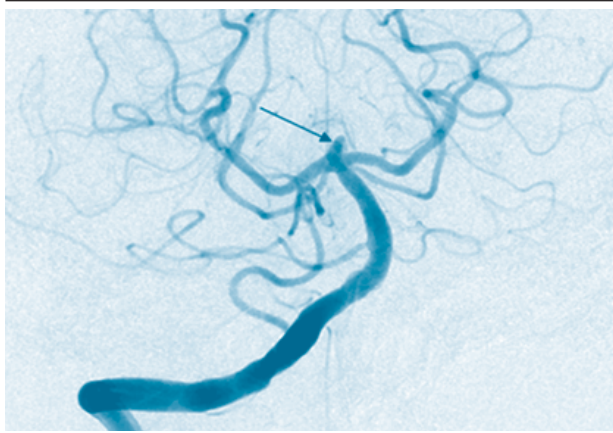


Figure 1A. Digital subtraction angiography (DSA) showing basilar tip aneurysm indicated by arrows; anteroposterior view

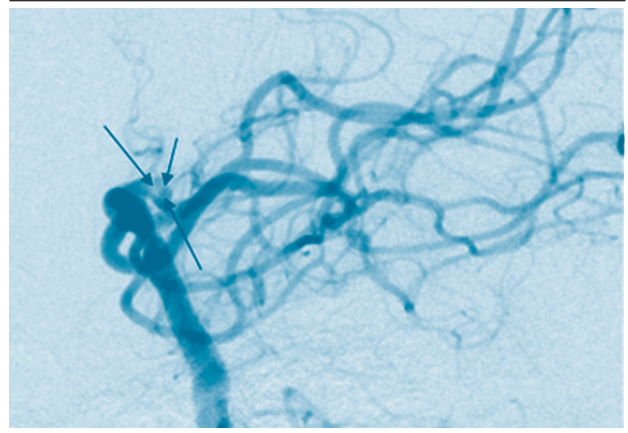


Figure 1B. Digital subtraction angiography (DSA) showing basilar tip aneurysm indicated by arrows; lateral view

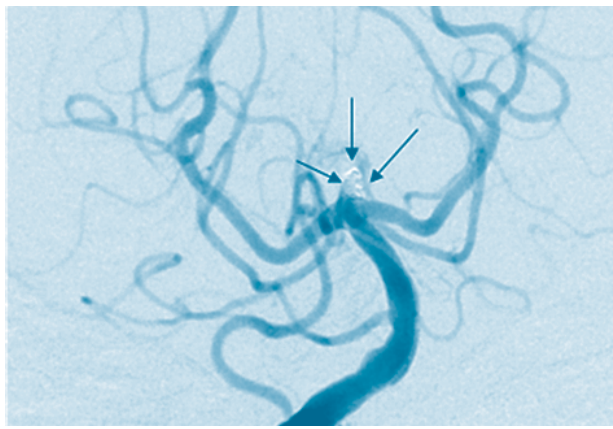


Figure 2A. DSA after coil embolization of the aneurysm showing mass of the coil inside the aneurysm indicated by arrows; anteroposterior view

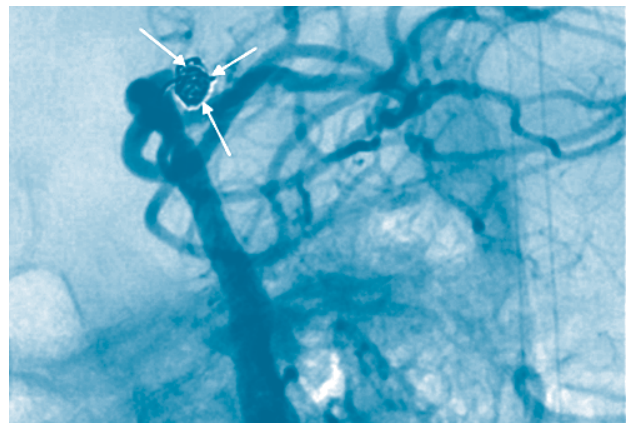


Figure 2B. DSA after coil embolization of the aneurysm showing mass of the coil inside the aneurysm indicated by arrows, lateral view

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