

Varicella Related Stroke in a Patient with Systemic Lupus Erythematosus and Systemic Sclerosis Overlap

Fahidah Alenzi^{1,*}, Abdulrahman Al Arfaj²

¹Rheumatology -King Faisal Specialist Hospital and Research Centre, Saudi Arabia

²College of medicine, Rheumatology section, King Saud University Hospital, Riyadh, Saudi Arabia

*Corresponding author: dr.al-enzi@hotmail.com

Abstract Systemic lupus erythematosus and systemic sclerosis reduce the body ability to fight infections. Although varicella zoster virus (VZV) infections are common in these diseases due to poor cellular immunity, VZV-related strokes are rare. When stroke does occur, it may be due to direct infection of the cerebral arteries, leading to a spectrum of both inflammatory and non-inflammatory pathological changes, including thrombosis. This case report is the first from the Middle East to describe a patient who developed stroke associated with herpes zoster ophthalmicus.

Keywords: *varicella zoster, stroke, systematic lupus erythematosus*

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1. Introduction

Acute primary varicella zoster virus (VZV) infection, resulting in chickenpox, is common, affects most of the population, presents as an acute neurocutaneous disease with severe pain and skin rash in a dermatomal distribution which is generally self-limited except for post herpetic neuralgia estimated by 8-27% of patient which can affect the quality of life [1,2,3]. In contrast, varicella zoster-related stroke is rare, with only a few reported cases — none in the Middle East. However, VZV is known to cause VZV vasculopathy, which has been associated with stroke, and the risk of stroke increases within one year of herpes zoster infection [4,5].

2. Case Report

A 50-year-old Saudi woman was diagnosed with systemic lupus erythematosus (SLE) with systemic sclerosis (SS) overlap based on the presence of arthritis, malar rash, alopecia, positive antinuclear antibodies and double-stranded DNA antibodies, low complement, Raynaud's phenomenon, telangiectasia, proximal sclerodactyly for more than 13 years. She was admitted and treated for herpes zoster ophthalmicus infection with 10 mg/kg acyclovir for 2 weeks. One week later, she developed an acute confused state, was unable to recognize her surroundings, had right-sided upper- and lower-limb weakness, slurred speech, and upper motor neuron right facial palsy with no history of fever, seizure, vision disturbance, skin rash, hair loss, joint pain, respiratory, gastroenterological, or urinary symptoms. She was conscious but disoriented to time, place, and person.

Her vital signs were normal. Power was reduced in the right upper and lower limbs with upper motor neuron (UMN) right facial palsy. Other neurological examinations were unremarkable. Systemic examination was normal. Blood investigations were unremarkable except for positive varicella IgG, a high ANA titer (1:10240 coarse speckled) and double-stranded DNA antibodies [879 IU/mL] (matching her previous reading, titer in last year), negative extractable nuclear antigens, antiphospholipid antibody with normal complement. CSF analysis showed pleocytosis with negative cultures. Other investigations included Echocardiography, Holter monitoring and Ultrasound Doppler of the carotid artery and electroencephalograms were normal. Brain magnetic resonance (MR) imaging revealed an acute ischemic stroke in the anterior choroidal artery territory involving the hippocampus, with high-signalintensity lesions on T2 and FLAIR images involving the posterior limb of the left internal capsule, left basal ganglia, left thalamus (Figure 1 and Figure 2). Brain MR venography was normal. Acyclovir (10 mg/kg) was administered intravenously over 8 hours for another 2 weeks, with 50 mg prednisolone for one week, 40 mg enoxaparin by subcutaneous injection twice daily, and 81 mg aspirin orally once daily. She showed marked improvement by next day. She was conscious, alert, and oriented to time, place, and person; her neurological symptoms continued to gradually improve.

3. Discussion

This is the first report from the Middle East of a patient developing stroke after herpes zoster ophthalmicus with background of SLE and SS. Although the differential diagnosis includes many other CNS disorders, such as

primary angiitis of central nervous system and granulomatous angiitis of the CNS (eg, sarcoidosis, tuberculosis, neurosyphilis, and fungal infections) ,also accelerated atherosclerosis may contribute to the risk of stroke in patients with systematic lupus erythematosus but the history of a preceding herpes zoster ophthalmicus, positive varicella IgG, CSF pleocytosis with negative bacterial, mycobacterial and fungal cultures, normal Echocardiography, Ultrasound Doppler of the carotid artery, negative antiphospholipid antibody would argue strongly for a diagnosis of herpes zoster vasculopathy. Brain magnetic resonance (MR) imaging which revealed an

acute ischemic stroke in the anterior choroidal artery territory involving the hippocampus, with high-signalintensity lesions on T2 and FLAIR images involving the posterior limb of the left internal capsule, left basal ganglia, left thalamus. These MRI finding are highly suggestive of herpes zoster vasculopathy. In lupus cerebritis the finding on brain MRI are different from those mentioned here. Despite the only elevated anti DNA titer here but actually it was matching her previous reading and same titer in last year when she was on good condition in the follow up in the clinic with normal complement and no other signs of lupus flare in joint or skin.

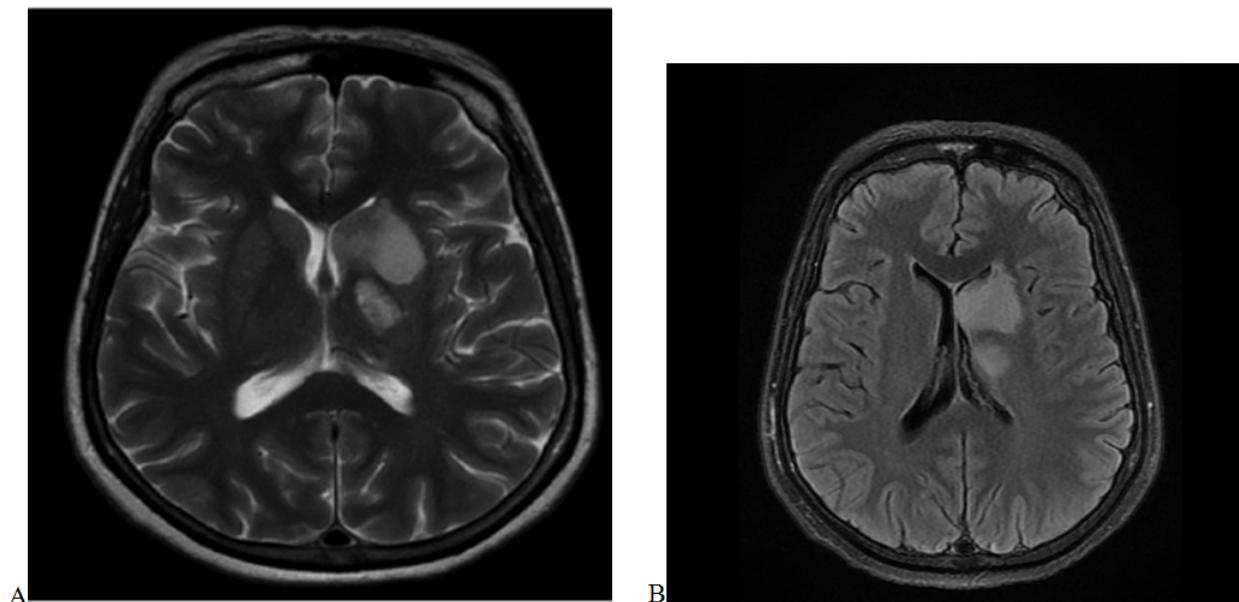


Figure 1. Axial T2 (A) and Axial FLAIR images (B) weighted Brain MRI revealed an acute ischemic stroke in the anterior choroidal artery territory with high-signalintensity lesions involving the posterior limb of the left internal capsule, left basal ganglia, left thalamus

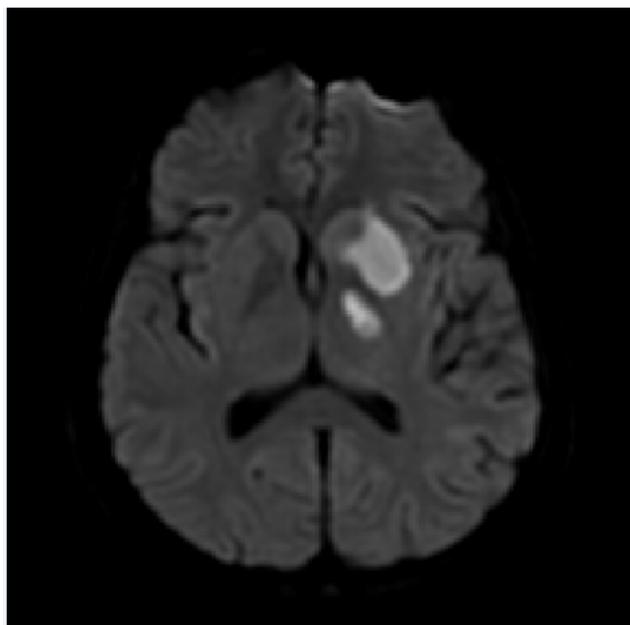


Figure 2. Axial Diffusion restriction imaging indicated acute infarcts

Some patients with herpes zoster vasculopathy present with symptoms consistent with encephalitis followed by focal deficit. This could be due to direct infection of the cerebral arteries, leading to a spectrum of both inflammatory and non-inflammatory pathological changes,

including thrombosis, as in our patient, as well as necrosis, dissection, and aneurysm formation [6]. Brain imaging shows ischemic or hemorrhagic infarction in virtually all cases of virologically confirmed VZV vasculopathy. MRI typically demonstrates both superficial and deep-seated lesions in both gray and white matter, with multifocal lesions, as seen in our patient. The risk of stroke is greatest soon after herpes zoster infection, especially within the first three months, and in those with ophthalmically distributed herpes zoster (450%) higher than among patients with a history of herpes zoster at other cutaneous locations, as seen in our patient [7]. In a cross-sectional study by RondaanCand colleague [8] show that SLE patient had higher prevalence of herpes zoster infection [9,10] with increased levels of IgG antibodies against VZV [11] while cellular immunity decreased and vaccination strategies should aim to boost cellular immunity against VZV.

4. Conclusions

This case report indicates an increased risk of stroke after herpes zoster ophthalmicus within the first year of VZV infection, and suggests the importance of treating patients aggressively with antiviral and immunosuppression medication, as patients with this mixed pathology are more likely to develop VZV infection and its complications.

Conflict of Interest

The authors have no conflict of interest to declare.

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