

# **Sneddon's syndrome, presented at first with intracranial hemorrhage: A case report**

## **Abstract:**

Sneddon's syndrome is characterized by chronic, progressive arteriopathy that causes ischemic stroke and skin lesions. It seems that thrombotic or embolic process in vessels may have role in its pathology. Neurological symptoms are always due to ischemic event of cerebrovascular system and skin manifestations include deep blue skin lesions with irregular margins called livedo reticularis and livedo racemosa. However, in spite of ischemic event, hemorrhagic cerebral accidents are unusual in this syndrome. Our case was apparently a normal woman with negative past medical history who, despite of usual ischemic cerebral manifestations, developed intracranial hemorrhage at first and after a few days to new skin lesions (livedo reticularis). In the follow-up she was diagnosed with sneddon's syndrome.

**Keywords:** Sneddon's syndrome, intracranial hemorrhage, livedo reticularis

## **Introduction:**

Sneddon's syndrome (SS) is characterized by chronic, progressive arteriopathy that causes stroke and skin lesions (1-4). Its incidence is 4 per 1 million in population and it usually occurs in young women (1). The pathophysiology of SS is unknown (5). But it seems that thrombotic or embolic process in vessels may have role in SS. The anti-phospholipid antibodies are variable in patients with SS. The most frequent cerebrovascular complication is ischemic stroke; however, in some studies other neurological manifestations were reported

such as headache, seizures, cognitive and psychiatric disturbances, tremor, myelopathy, and encephalopathy (1, 2, 5, 6). The skin manifestations include deep blue skin lesions with irregular margins called livedo reticularis (LR) and livedo racemosa. These skin lesions are produced by non-inflammatory vasculopathy and can be found on the trunk, arms and legs.(3, 7, 8) Other organs may be involved with SS like the heart, kidney and eye which could lead to myocardial, renal and retinal infarction. Furthermore, the cardiovascular involvement may cause hypertension and cardiac valve disease (1, 9-11).

In this study, we present a 45 year-old woman who, despite of usual ischemic cerebral manifestations, presented at first with intracranial hemorrhage (ICH) and in the follow-up she was diagnosed with SS.

### **Case presentation:**

The patient was a 45 year-old lady that was admitted to neurology department for the first time because of headache and slurred speech a few hours prior to her admission. She also complained from blurred vision and right side weakness. She had no history of recent head trauma or systemic febrile illness. In her past medical history, she did not have hypertension, infertility, fetal loss, any skin disorder or any other disease. Personal, drug and family histories were also negative.

In physical examination of the admission time, blood pressure was 155/85 mmHg but other areas of vital signs (pulse rate, respiratory rate and temperature) were normal. She had normal mental status, but suffered from incoherent speech and unilateral (right side) hemiparesis. Right side plantar reflex was upward, too. In systemic examination, many scattered purple mottling skin rashes (LR) were seen which were more obvious on extremities (Figure 1). Otherwise, no significant abnormality was presented in general examination.



Figure1: Dorsal and palmar surface of the hands show purple discoloration of the skin (livedo reticularis).

The laboratory data were as follows (Table 1):

Plt	217000/dl
WBC	7000/mm
Hb	11.7mg/dl
ESR	26mm/hour
CRP	10 mg/l
ACLA	1.1 and 5.9 units (normal range $\leq 1$ )
ANA	1 (normal range $\leq 10$ )

Plt: platelets count, WBC: White Blood cell Count, Hb: Hemoglobin, ESR: Erythrocyte Sedimentation Rate, CRP: C-Reactive Protein, ACLA: Anti-Cardio-Lipin Antibody, ANA: Anti-Nuclear Antibody.

Furthermore, C3 and C4, c- ANCA, p-ANCA, protein C, protein S, antithrombin-III, BUN, Creatinin and liver function test were in the normal range. Immunoglobulin electrophoresis showed normal value, as well.

In the brain CT scan and MRI, a large intra-parenchymal brain hemorrhage in the left parietal lobe was detected (Figures 2 and 3).



Figure2: Non-enhanced brain CT scan; an intracranial hemorrhage in the left parietal lobe.

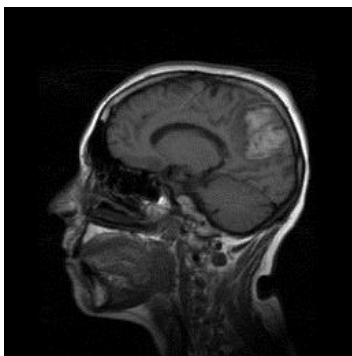


Figure3: Sagittal view of non-contrasted brain MRI; a hemorrhagic area in the parietal lobe.

For further evaluation, brain CT angiography (CTA) and venography (CTV) were done with the following reports: anterior, middle and posterior cerebral arteries, also the vertebral and basilar arteries showed normal course with no evidence of narrowing or aneurysmal dilatation. No sign of filling defect was seen in the mentioned vessels. There was no evidence

of Arterio-Venous Malformation (AVM) among the imaging. Brain CTV was normal (Figures 4 and 5).

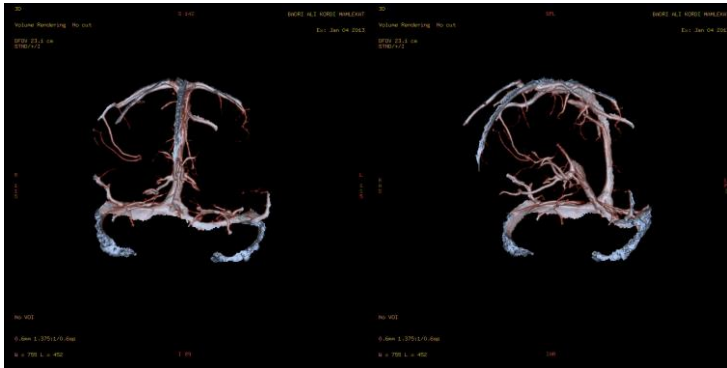


Figure 4 (a,b): Coronal and oblique views of the reconstructed brain CTV are normal.

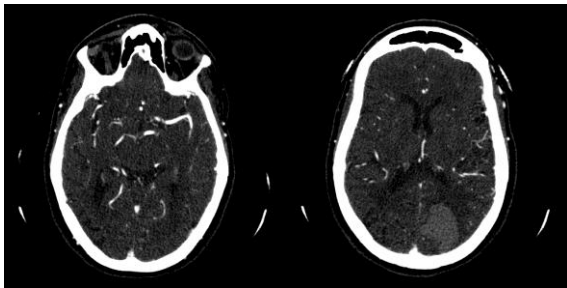


Figure 5: Axial views of the non-reconstructed brain CTA show no abnormality in the arteries.

To evaluate the probable cardiogenic cause of ICH, Echocardiography was performed and did not demonstrate any clue for embolic source of hemorrhage.

Surgical pathology report of the skin lesion was consistent with possibility of vasculopathic process. According to the signs and symptoms, the patient was diagnosed with SS and treated in a conservative manner. She improved significantly 1 month after discharge.

## Discussion:

SS is a vasculopathy with skin lesion which was at first described by a dermatologist who found LR in a patient with multiple ischemic stroke (2). Its etiology is unknown but we know that this syndrome involves the small and medium-sized arteries. SS has three forms: the first form has no causative factors, the second one is related to anti-phospholipid antibodies and the last one is systemic lupus erythematosus associated with or without the presence of antiphospholipid antibodies (1, 2, 5, 7, 12). There are many studies that show this syndrome is inherited in an autosomal dominant pattern (13-15). It is a type of vasculitis disease presented with skin lesions and neurologic problems. The skin lesions are deep bluish discoloration with irregular border called LR. SS almost always presents with ischemic event of cerebrovascular system that can cause headache (85%), transient ischemic attack, visual field defect, cognitive impairment and psychiatric problems, hemiplegia, hemianopia, dysarthria, central facial paralysis, seizures, myelopathy and encephalopathy. However; in spite of ischemic event, hemorrhagic cerebral accidents are unusual in SS (1, 2, 4, 6, 9, 10).

SS could also involve other systems and present with non-skin and non-neurologic symptoms. Cardiovascular system is one of them with valvular cardiac problems (specially Mitral valve thickening) or hypertension(1, 10). This syndrome may impair the renal function (1) or occlude the central retinal artery, central retinal vein with subsequent retinal neovascularization (16, 17).

Although SS usually presents with ischemic cerebrovascular events, our case was a woman who developed hemorrhagic stroke. Also she represented LR during the hospital course and at the time of ICH occurrence. There are some reports which are indicative of co-incidence of stroke and LR in these patients (1).

As mentioned before, there are different forms of SS with or without anti-phospholipid antibodies (1, 2); our case was not associated to these antibodies and the result of 2 times investigation for anti-phospholipid antibodies were negative. Indeed, there were no evidence of cardiac or renal involvement in both physical and laboratory examination. Skin lesions biopsy of our case was histologically non-specific too. There are some reports about non-specific laboratory results in SS, like what we saw in this patient. On the other hand, the diagnosis has usually been made by clinical symptoms and complementary paraclinic investigations are used to document the disease (18).

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