INTERNAL MEDICINE

□ CASE REPORT □

Nasal Septal Perforation in a Patient with Takayasu's Arteritis; a Rare Association

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Abstract

Takayasu's arteritis (TA) is a chronic, progressive, granulomatous inflammation of the aorta and its major branches, and is diagnosed often only in the late stage. The late phase of disease is characterized by variety of ischemic symptoms due to stenosis or occlusion of the major arteries. Although major neurological events such as stroke, transient ischemic attacks, and seizures due to either progressive arterial stenosis or hypertension, are reported to occur in one-fifth of the patients, nasal septal perforation has not been previously reported. Herein we present a young woman with TA who was hospitalized with left hemiparesis due to occlusion of stented carotid artery. Her clinical course was also complicated with nasal septal perforation. This case suggested that nasal septal perforation could be a rare complication of TA and might be considered as a part of the clinical spectrum of the disease.

Key words: Takayasu Arteritis, septal nasal cartilage, hemiparesis

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Introduction

Takayasu's arteritis (TA) is a rare chronic inflammatory disease of unknown etiology characterized by granulomatous panarteritis of the aorta and its major branches (1). The arteritis in TA causes adventitial thickening and cellular infiltration of the tunica media with local destruction of vascular smooth muscle cells. Intimal hyperplasia is followed by fibrosis in the media and intima and leads to stenosis or occlusion (2). TA produces a variety of symptoms due to stenosis of major arteries.

Nasal septal perforation has been described in patients with various rheumatic diseases. Nasal involvement is one of the major clinical features of Wegener's granulomatosis and it may lead to massive destruction of septal cartilage (3). Nasal septal perforation is also a recognized complication of mucosal involvement in systemic lupus erythematosus and it is reported in up to 5% of patients (4, 5). It has been rarely described in other rheumatic diseases including sarcoidosis, juvenile idiopathic arthritis, adult onset Still's disease, and rheumatoid arthritis (6-8). To our knowledge nasal septal perforation has not been reported in patients with isolated TA. Here, we describe a young woman with TA whose disease course was complicated with cerebrovascular accident and nasal septal perforation.

Case Report

A 34-year-old woman was hospitalized with the complaints of headache, dysarthria, left sided weakness for three weeks. Two years prior to this admission she was diagnosed as having TA based on diplopia, claudication of the arms, loss of bilateral arm pulses, arterial bruits, elevated acute phase reactants, and typical arteriographic abnormalities. Her blood pressure was evaluated from legs and found to be 130/85 mmHg bilaterally. She was put on high dose prednisolone and weekly methotrexate treatment. Two months after

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this therapy, following the normalization of acute phase reaction, percutaneous transluminal angioplasty and stenting was performed for the right common carotid artery stenosis. Then the patient was lost to follow-up. Approximately three weeks before the development of her new symptoms she ceased her treatment including acetyl salicylic acid by her own decision. On physical examination; except for right carotid arterial pulse loss there were no new pulse loss or bruits and she had left hemiparesis affecting the arm more than the leg. Her deep tendon reflexes were more pronounced on the left side. Laboratory investigation revealed an erythrocyte sedimentation rate of 26 mm/h and a C-reactive protein level of 61 mg/L (normal value 0.1-8.2 mg/L). Magnetic resonance imaging revealed a sub-acute infarct in right internal border zone. Doppler ultrasound examination showed thrombotic occlusion of stented right common carotid artery, increased wall thickness in all arteries, and severe stenosis of the left carotid and bilateral vertebral arteries. Magnetic resonance angiography (MRA) confirmed the severe stenosis of left common, internal and external carotid, and bilateral vertebral arteries and additionally it showed the occlusion of bilateral subclavian arteries. The MRA examination also demonstrated that right external carotid artery retrogradely filled the right internal carotid artery suggesting carotid steal syndrome (Fig. 1).

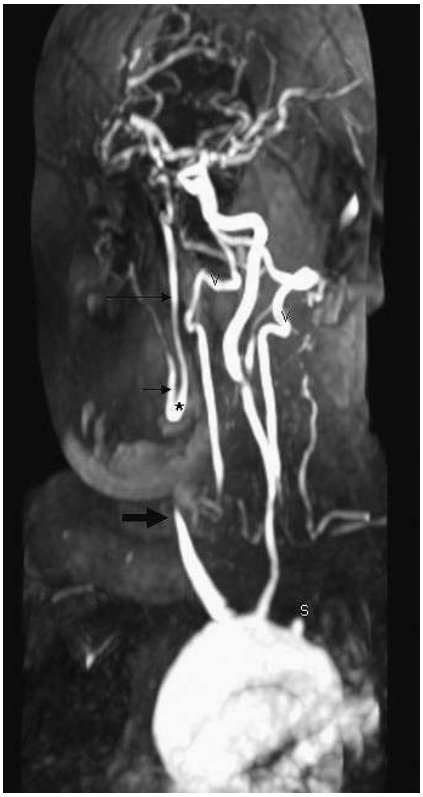


Figure 1. **Gadolinium-enhanced magnetic resonance angiogram (MRA) showed occlusion of right stented common carotid artery (solid arrow), and bilateral subclavian arteries. This examination also demonstrated retrograde filling of the right internal carotid artery (long arrow) from the external carotid artery (short arrow) suggesting carotid steal syndrome (*). V indicates vertebral arteries, and S indicates subclavian arteries.**

On this admission, she also complained of nasal crusting and obstruction over a two week period. There was no history of previous nasal trauma, surgery, application of topical agents, or environmental exposure to metals. She did not smoke or take any illicit drugs. Physical examination of the nose revealed intranasal purulent necrotic crusting and a subtotal nasal septal perforation (Fig. 2). Magnetic resonance imaging of the head also revealed the near total defect in the nasal septum (Fig. 2). Histopathologic examination of the nasal septum showed mild nonspecific inflammation, ulceration and granulation tissue formation with regenerative and reactive mucosal epithelial changes. Vascular luminal narrowing and/or obstruction were extensive and both intimal and medial thickening were observed. These changes were found to be compatible with ischemic changes since inflammation of the vascular wall, giant cells, endothelialitis and fibrin deposition were not observed (Fig. 3). No microorganism was identified by Gram, fungal and acid fast

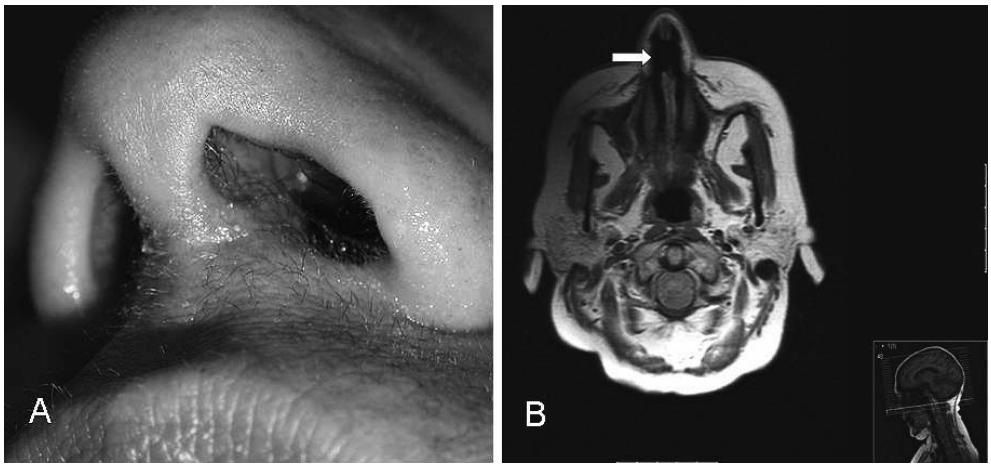


Figure 2. **A: Subtotal nasal septal perforation can be detected on gross physical examination. B: Magnetic resonance imaging of the head revealed almost total loss in nasal septal cartilage (arrow).**

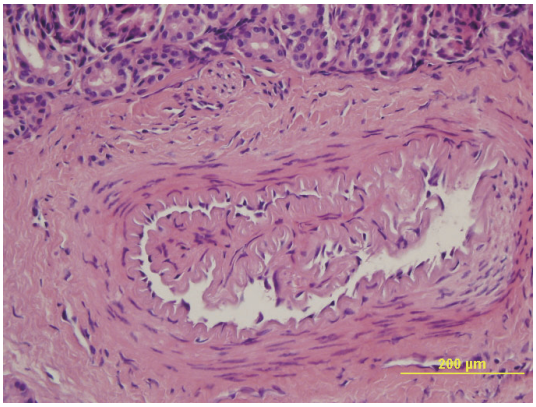


Figure 3. Medial and amorphous intimal thickening of the vessel wall was noted adjacent to seromucous nasal glands (Hematoxylin and Eosin staining, original magnification×20).

basilli stains. Cultures were also negative. All serum autoantibody tests including antinuclear antibodies (ANA), anti-double-stranded DNA antibodies (anti-dsDNA), rheumatoid factor (RF), antineutrophil cytoplasmic antibodies (ANCA), antibodies against extractable nuclear antigens, and anticardiolipin antibodies were negative. Serological tests for syphilis and HIV were also found to be negative. In urinalaysis there was no erythrocyte or leukocyte and proteinuria was not detected. The other investigations including computed tomography failed to show pulmonary or renal lesions compatible with Wegener's granulomatosis. Methyl prednisolone 1 mg/kg/day was restarted and, intravenous pulse cyclophosphamide (500 mg) and low molecular weight heparin were added. Two weeks after the first cyclophosphamide pulse therapy, bypass graft surgery was attempted to restore cerebral vascularization but failed due to the absence of appropriate vascular tissue for grafting. At the time of surgery the erythrocyte sedimentation rate was 30 mm/h and C-reactive protein level was 41 mg/L (normal value 0.1-8.2 mg/L). Following surgery, her condition detoriated and she died two months after hospitalization.

Discussion

Takayasu's arteritis is a rare chronic vasculitis of unknown etiology. Disease process can be divided into two stages. In the acute stage adventitial vessels of aorta and its main branches' wall become inflamed. The media is infiltrated by inflammatory and occasional giant cells. Thereafter the intima becomes thickened with deposition of mucopolysaccharides, smooth muscle cells, and fibroblasts. In the chronic stage, elastic tissue is replaced by fibrosis with the thickening of all three layers. Accordingly, nonspecific systemic symptoms predominate and often are unrecognized during the early phase of the disease. The late stage is characterized by ischemic symptoms resulting from arterial occlusion (9).

The disease is associated with a high incidence of morbidity and a significant risk of mortality. Neurologic morbidity, characterized as stroke, transient ischemic attacks, and visual disturbances, has been reported in 5 to 20% of patients (10). These complications may result from progressive arterial stenosis or uncontrolled hypertension. The present patient experienced an ischemic cerebro-vascular accident, an internal border zone infarct, resulting from the occlusion of stented carotid artery. The pathogenesis of this kind of paraventricular infarct is distinct from lacunar infarcts and is reported to be secondary to large vessel occlusive disease as in our patient (11).

Nasal septal perforation presents a challenge to physician. There are many causes of this problem and a very thorough evaluation is necessary to treat it appropriately. We describe for the first time the occurrence of nasal septal perforation in a patient with isolated TA. Previously Yamasaki et al described a case of Wegener's granulomatosis concomitant with TA who had experienced chronic sinusitis resulting in destruction of the nasal septum and maxillary sinus (12). In another patient suffering from TA, Shine et al reported saddle nose deformity secondary to bony septal defect with the absence of mucosal disease in the nose or paranasal sinuses (13). Some of other inflammatory rheumatic diseases may lead nasal septal perforation with different mechanisms of damage. It is well known that granulomatous inflammation in Wegener's granulomatosis and also sarcoidosis may lead to nasal septal perforation as well as saddling deformity (14).

It was also shown that ischemia may lead to nasal perforation. In addition to interruption of the mucoperichondral blood supply by tight nasal packs used in the prevention of epistaxis, arteriolar narrowing in patients with renal failure, and vasoconstriction due to nasal sprays or cocaine abuse, ischemia of nasal septum may result from some rheumatic diseases such as systemic lupus erythematosus and antiphospholipid syndrome (14-16). Nasal septal perforation has been reported up to 4.6% in systemic lupus erythematosus and 0.8% in antiphospholipid syndrome (5, 17, 18). The high prevalence of systemic vasculitis in systemic lupus erythematosus patients with nasal septal perforation suggests that small vessel vasculitis could be an important etiologic factor in such patients.

The nasal mucosa receives its blood supply from the ophthalmic artery of the internal carotid artery and maxillary artery of the external carotid artery. The end artery of the maxillary artery, sphenopalatine artery, supplies main blood flow of the nasal septal mucosa (19, 20). In the present case, since there was no evidence of granulomatous inflammation or vasculitis on histopathologic examination of biopsy material, ischemia during the large vessel occlusion accompanied by internal carotid steal phenomenon from the external carotid artery probably lead to nasal septal perforation. Simultaneous occurrence of cerebrovascular accident and nasal septal perforation further supports this hypothesis. In summary, nasal septal perforation may develop in patients with TA and might be secondary to severe carotid artery involvement.

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