

Eosinophilic Granulomatosis with Polyangiitis as Uncommon Cause of Foot Drop and Extremities Pain

Shi-Ting Li^{1*}, Hui Zhou², Chio Li², Yi Dong²

¹Department of General Medicine in Second Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China;

²Department of Neurology in Second Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China

ABSTRACT

Eosinophilic Granulomatosis with Polyangiitis (EGPA) is a rare systemic vasculitis characterized by disseminated necrotizing vasculitis existing among patients with eosinophilia and asthma. Timely diagnosis and therapy are important for the patients to determine prognosis. Although peripheral nerve involvement is commonly observed in EGPA patients, foot drop and neuropathic pain with rapid progress is rare. We reported the case who initially manifested as paralysis of peroneal nerve and one-year rapid progress from asthma to vasculitic stage. The knowledge of the uncommon manifestations in rare disease is significant.

Keywords: Eosinophilic granulomatosis; Asthma; Allergic rhinitis; Paroxysmal attack; Electrophysiology

INTRODUCTION

Eosinophilic Granulomatosis with Polyangiitis (EGPA), formerly termed as Churg-Strauss Syndrome (CSS), is a rare systemic vasculitis affecting small-to-medium sized vessels. EGPA is a multisystemic disease with heterogeneous aspects, generally manifesting as a clinical picture of recurrent asthma, allergic rhinitis, and eosinophilia [1]. Although EGPA is considered as Anti-Neutrophil Cytoplasmic Antibody (ANCA) associated vasculitis, the absence of ANCA could not completely exclude the diagnosis [2].

EGPA most often follows three phases, including prodromal, eosinophilic, and vasculitic patterns. During the vasculitic stage, the peripheral nerve involvement is a common complication of EGPA, besides renal and pulmonary symptoms [3]. Because of low incidence of the disorder, little data are available on the clinical stage. Its rarity also led to few studies focusing on EGPA-associated peripheral neuropathy [2,4-7]. Asthma usually precede vasculitis by up to 10 years. On average, asthma develops from 3 to 5 years before another organ involvement. And, it is even uncommon for the coincidence of asthma and vasculitis in the patient [8,9].

Currently, very few reports depicted limbs weakness and pain as the chief complaint among EGPA patients [10]. Here we describe

a case of EGPA as prominent foot drop and neuropathic pain with rapid progress.

CASE PRESENTATION

A 62 year-old man who had suffered from asthma for 1 year presented to the department of orthopedics in our hospital, following 2 months of right lower limb pain and weakness. After extending to left lower limb, he was transferred to the Neurology Clinic for further diagnosis and treatment. This study was approved by the Ethics Committees of the local hospital.

Before admission, he had consulted the pulmonary physician. His initial symptom was wheezing with paroxysmal attack. He complained of aggravating wheezing and occasional dry cough. He has no fever and nasal obstruction. Therefore, he was given a diagnosis of asthma. After long-term symbicort turbuhaler treatment, his complications were not improved significantly than previously.

One year later, he developed sensory disturbances of right lower extremity, including pain mainly localized on the pelma, and numbness and decreased sensation on the lateral crural region. The patient simultaneously suffered from motor weakness predominantly manifesting as foot drop. After one month, the sensory disturbances and motor deficits spread to his left lower limb.

*Correspondence to : Shu-Ting Li, Department of Neurology in Second Affiliated Hospital, Zhejiang University School of Medicine, 88 Jiefang Rd, Hangzhou, 310009, China; E-mail: shutingli@zju.edu.cn

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He was afebrile and vital signs were intact. Physical examination was otherwise unremarkable findings besides neurological examinations. Muscle force of bilateral upper extremities, hip flexors and extensors were 5/5; 2/4 in right/left dorsal flexion and 4/4 in right/left ankle plantar flexion. The biceps, triceps and brachioradialis reflexes showed bilaterally intact. However, bilateral patella and ankle tendon reflexes were decreased. Superficial and deep perception were decreased in the bilateral lower extremities.

Electrophysiology (EMG) studies confirmed the clinical findings of our patient. When firstly presented to Orthopedics Clinic, EMG revealed partial sciatic neuropathy. One-month later, EMG demonstrated poly-mononeuropathy that motor and sensory compound muscle action potentials of tibial and peroneal nerves were bilaterally declined. EMG in our patient showed the lesion pattern consistent with axonal damage.

His full blood count revealed noted leukocytosis ($18.5 \times 10^9/L$), predominantly eosinophilia ($13.55 \times 10^9/L$). Immunological tests showed the positive PR3-ANCA (33.84 AU/mL), increased IgG hypergammaglobulinemia (19.03 g/L) and rheumatoid factor (65.1 IU/mL). The tests were unremarkable for complement C3 and C4, Anti-Nuclear Antigen (ANA) and erythrocyte sedimentation rate.

Although cranial Magnetic Resonance Imaging (MRI) showed no lesion, chronic paranasal sinusitis was observed in the patient, including bilateral ethmoid sinus and right maxillary sinus (Figure 1). Thoracic scan was normal without evidence of pulmonary infiltrates or nodules.

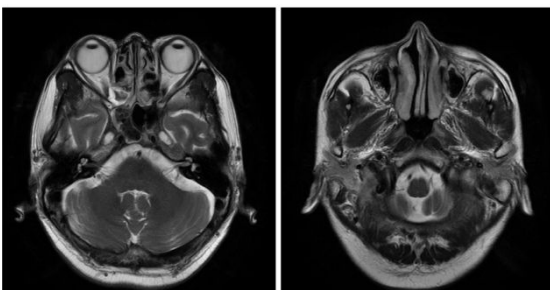


Figure 1: MRI findings of paranasal sinus of our case.

The diagnosis of EGPA was established according to the criteria [11]. As an initial treatment, methylprednisolone 120 mg per day was intravenously give for 5 days. Subsequently, corticosteroid therapy was tapered and another cyclophosphamide 400 mg were administrated per one month. After 3 days of corticosteroid treatment, the muscle force and sensation of bilateral lower limbs gradually improved. One week later, eosinophil blood count quickly decreased to normal ranges. On follow-up, the patient received sustained remission.

DISCUSSION

EGPA has an extremely low incidence but potentially organ or life-threatening disease, annually ranging from 0.5 to 6.8 newly diagnosed patients per million population [12]. Due to its multiorgan involvement and heterogeneous manifestations,

EGPA have been a diagnostic challenge with an extensive differential. The various criteria for EGPA have been proposed, but 1990 American College of Rheumatology edition is widely used [11]. The diagnostic criterion requires 4 or more of the following presentations: asthma, pulmonary infiltrates, paranasal sinus abnormality, eosinophilia >10%, peripheral neuropathy and extravascular eosinophil. Therefore, our patient could be diagnosed as EGPA based on a clinical combination of asthma, paranasal sinus, eosinophilia and peripheral neuropathy.

In our presented case, some interesting points were worthy of pondering. Generally, asthma precedes the vasculitic presentations by 8 to 10 years [13]. Shimoi et al. reported the average duration of precedent asthma was 6.1 years [14]. However, our reported patient progressed to the vasculitic phase after only one-year asthma history. Although the patient with EGPA have complications with relatively mild asthma, the respiratory symptoms were refractory. The previous study suggested that the medications without stimulant on airways would be more convenient for EGPA patients [15].

The previous studies have demonstrated that peripheral nerve involvement was common in EGPA patients [3,5], mainly manifesting as a multiplex mononeuropathy rather than a distal symmetric polyneuropathy. Our patient initially presented with mononeuropathy mimicking as peroneal nerve palsy, which is the most frequent entrapment neuropathy of the lower limb [16]. The presentations were relatively uncommon [10,17,18]. Therefore, the knowledge of rare symptoms in rare disease is essential for timely treatment. Additionally, our patient manifested as rapid disease course with deterioration in EMG scan. The extensive axonal polyneuropathy was observed after only one month. The clinical expressions further emphasized the importance of timely diagnosis for EGPA.

The mainstay in the treatment of EGPA is sustained corticosteroid. The rapid improvement of our patients ascertained its efficacy. The previous studies indicated that a good prognosis was dependent on effective therapy in the early stage, and corticosteroid administration for patient with vasculitis stage in the end stage could be non-sensitive [19,20]. However, the recovery of our case demonstrated that the prognosis of EGPA-associated peripheral neuropathy could be excellent.

In summary, diagnosis of EGPA was often delayed because of the absence of classic symptom recognition. Foot drop might occur due to various causes. But, EGPA should be suspicious when foot drop is accompanied by multiple system involvement, especially asthma and eosinophilia. Moreover, timely diagnosis and suitable administration in EGPA could significantly alter the prognosis, and should be emphasized in the patient with atypical symptoms.

CONFLICTS OF INTEREST

The authors report no conflict of interests.

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