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a case report**

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Title:

**Herpes zoster infection-induced common peroneal nerve paresis resulting in foot drop in a patient with eosinophil fasciitis- a case report**

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Immunosuppressed and elderly individuals have an increased risk of reactivation of the varicella virus causing herpes zoster (HZ) infection (1). It is estimated that about 25 % of individuals with a previous varicella infection will suffer from HZ (2).

Studies have suggested symptomatic motor neuron involvement manifesting as paresis or paralysis to occur in about 1-15% of patients referred to hospital with HZ (3, 4). Total recovery of the paresis is reported in about 50% (3).

Eosinophil fasciitis is a rare disease that may be accompanied by myositis and present with a variety of musculoskeletal symptoms and dermatological findings (5). The treatment is individually adjusted often including systemic corticosteroids and methotrexate (MTX) (5).

#### Case description:

A 73-year old female developed within 4 weeks muscular pain, generalized muscular weakness with gait difficulty and facial and extremity edema. She had elevated CRP, thrombocytosis and fluctuating eosinophilia, EMG showed discrete sign of myopathy, bone marrow biopsy showed eosinophilia. Muscle biopsy showed fasciitis with muscular inflammation, and the patient was diagnosed with eosinophil fasciitis with myositis.

The disease was in remission for 6.5 years on MTX and 7.5 mg prednisolone.

At the age of 79 the patient experienced fatigue and pain in the lower left extremity for one week before she developed a vesicular rash confined to the L5 and S1 dermatomes of the left shin and plantar aspect of the left foot and left foot drop, which lead to admission (Image 1 and 2). MRI of the lumbar spine was without signs of intraspinal compression of the nerve roots.

Disease activity in the underlying fasciitis and myositis alternatively development of secondary vasculitis was suspected and the patient was transferred to the rheumatologic department three days after admission for treatment with high dosage prednisolone (75 mg/day). The vesicular rash was biopsied and swabbed, and oral valaciclovir treatment was initiated after dermatological evaluation due to a clinical suspicion of shingles. The inoculation turned out positive for VZV. Nerve Conduction Study (NCS), showed axonal affection of the peroneus profundus and superficialis, compatible with HZ mediated motor neuron affection of the common peroneal nerve. Skin biopsy showed lesions compatible with HZ and no sign of vasculitis.

Accordingly MTX was paused, prednisolone dose was reduced to 37.5 mg/day and further tapered to 7.5 mg/day within a month. The vesicular rash on the leg resolved whereas the drop foot was still present 3 months later.

#### Discussion:

Eosinophilic fasciitis may have a relapsing course inclining focus on further autoimmune manifestations (5).

The skin manifestations initially were non-specific without a clear dermatomal pattern, which usually contributes to the diagnosis. HZ is an unusual cause of drop foot, making the case diagnostically challenging even if motor neuron involvement seems to be relatively frequent among patients with HZ (3, 4). If treatment is initiated early, remission is possible both in the case of drop foot caused by HZ and mononeuritis multiplex (1, 4, 6).

The antiviral treatment has few side effects, and intravenous treatment could be started before the final diagnosis is set (7). Oral corticosteroids are recommended in combination with systemic antiviral therapies to reduce the acute pain in HZ, but it is not known if the outcome of the motor neuron function is improved by this (7). Our patient started antiviral therapy more than three days after onset of symptoms, and thus too late according to recommendations (7). Accordingly, she did unfortunately not recover from her drop foot whereas the rash disappeared.

Vaccination of the present patient might have prevented the episode. There are two different types of vaccines against HZ; a live attenuated vaccine and a more recently developed subunit vaccine, which has been proven to be more effective than the live vaccine (8). The live attenuated vaccine may cause infection with the vaccine strain in immunocompromised individuals, whilst the subunit vaccine does not impose this risk, and may be used in immunocompromised individuals, however its efficacy has not yet been determined (9). EULAR encourages consideration of HZ vaccination, and also recommend to avoid the use of live attenuated vaccines whenever possible (10)

We suggest initial treatment with antiviral drug and high-dose steroids in patients with eosinophil fasciitis developing signs of motor neuron involvement when both HZ, active fasciitis as well as vasculitis may be suspected. Diagnostic procedures should include swab and biopsy of the skin manifestation supplemented with NCS. Vaccination against VZV with HZ subunit vaccine should be considered in these patients.

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## Images

Grouped vesicles (some with central umbilication) on an erythematous base and discrete single erosions in the L5 and S1 dermatomes on the left shin and plantar surface of the left foot.

