Case Report / *Olgu Sunumu*

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An atypical Stiff Person Syndrome patient presenting with epileptic seizures, brainstem involvement, and muscle stiffness of the lower body- a case report

Epileptik nöbetler, beyin sapı tutulumu ve alt vücudun kas sertliği ile seyreden atipik Stiff Person Sendromu - bir olgu sunumu

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ABSTRACT

Stiff Person syndrome (SPS) is a rare autoimmune neurological disorder presenting painful muscle spasms, and stiffness targeting mainly lower limbs, lower back, and abdomen. Antibodies such as Anti-GAD can be found positive. Electromyography is a valuable tool for diagnosing SPS, showing simultaneous contractions of the agonistic and the antagonistic muscle groups. Here in this case study, we present a 40-year-old male with SPS, presenting with usual symptoms of SPS like lower limb and lower back stiffness and painful muscle spasms, but unusual symptoms as well, like epileptic seizures, high amount of sweating and itching, difficulty in swallowing and urinary-stool retention. EMG findings were correlated with SPS, and anti-GAD levels were found positive. After Intravenous immunoglobulin treatment, the patient had a complete remission. In this paper, we will look at the unusual symptoms and findings in the SPS, and the important place of electromyography in diagnosing this disorder.

Keywords: Stiff person syndrome, epileptic seizures, electromyography, anti-GAD

ÖZ

Stiff Person Sendromu (SPS), genellikle alt ekstremiteler, bel ve karın bölgesine yönelik ağrılı kas spazmları ve sertlik ile kendini gösteren nadir bir otoimmün nörolojik hastalıktır. Anti-GAD gibi antikorlar pozitif bulunabilir. Elektromiyografi, SPS tanısında değerli bir araçtır ve agonist ve antagonist kas gruplarının eş zamanlı kasılmalarını gösterir. Bu olgu çalışmasında, SPS ile başvuran 40 yaşında bir erkek hasta sunulmuştur. Hasta, SPS'nin tipik belirtileri olan alt ekstremite ve bel sertliği ile ağrılı kas spazmlarının yanı sıra; epileptik nöbetler, aşırı terleme ve kaşıntı, yutma güçlüğü ve idrar–dışkı tutamama gibi alışılmadık semptomlar da göstermekteydi. EMG bulguları SPS ile uyumluydu ve anti-GAD seviyeleri pozitif bulunmuştu. İntravenöz immün globulin tedavisinin ardından hasta tam bir remisyon sağladı. Bu sunumda, SPS'deki alışılmadık semptomlar ve bulgular ile bu hastalığın tanısında elektromiyografinin önemli rolüne değinilecektir.

Anahtar Sözcükler: Stiff Person Sendromu, epileptik nöbet, elektromiyografi, anti-GAD

INTRODUCTION

Stiff Person Syndrome (SPS) is a rare autoimmune neurological disorder that presents a variety of symptoms. The primary manifestations include painful muscle spasms and stiffness, particularly in the lower limbs, lower back, and abdomen. However, some patients may also experience less common symptoms, such as epileptic seizures, excessive sweating, urinary retention, difficulty swallowing, and cranial neuropathies. The most frequently associated antibody in SPS is Anti-Glutamic Acid Decarboxylase (Anti-GAD). Electromyography (EMG) is a valuable diagnostic tool for SPS, as it demonstrates simultaneous muscle contractions in both agonist and antagonist muscle groups.

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In this case report, we discussed a 40-year-old SPS patient with uncommon symptoms, highlighting these rare features of the disorder.

CASE REPORT 1

A 40-year-old male with no history of chronic illness was admitted to our clinic with symptoms including numbness on the right side of his face, dysphagia, urinary retention, painful muscle spasms in the lower limbs, and difficulty walking. His symptoms began a year prior to admission, initially mild but gradually worsening over time. He also experienced excessive sweating followed by generalized itching. Notably, the patient had suffered two generalized tonic-clonic seizures before admission. Urinary catheterization was performed on the patient before his admission because of his urinary retention.

During the neurological examination, the patient was cooperative and oriented. Cranial nerves I–XII were intact except for the trigeminal nerve, where hypoesthesia was noted on the right side of the face. Muscle strength in the upper limbs was normal, but rigidity was observed in the lower limbs, predominantly in a flexor posture. Hyperreflexia was evident in the Achilles and patellar tendons. The patient had a low Body-Mass index (BMİ) due to his dysphagia. Routine blood tests revealed no abnormalities, and cranial and spinal magnetic resonance imaging (MRI) findings were normal. Cerebrospinal fluid (CSF) analysis from a lumbar puncture was also unremarkable. The patient underwent screening for potential tumors, but all tests came back negative.

Electroencephalography (EEG) showed sharp slow-wave activity, consistent with epileptiform discharges in the right temporo-occipital region. Electromyography (EMG) revealed spontaneous yet normal motor unit potential (MUP) activity in both agonist and antagonist muscle groups in the proximal and distal lower limb and paraspinal muscles (Figure-1). There was no evidence of myoclonic activity, and the patient had no signs of encephalomyelopathy, so progressive encephalomyelitis with rigidity and myoclonus (PERM) was overruled. Blood tests confirmed the presence of anti-GAD antibodies, leading to a diagnosis of SPS.

The patient was treated with intravenous immunoglobulin (IVIG) at a dose of 2 g/kg. Within three days of treatment, the patient achieved complete remission. Painful spasms, sweating, and itching improved significantly over time. Rigidity in the lower limbs diminished, allowing the patient to walk unassisted, and the hypoesthesia in the right trigeminal nerve resolved. Follow-up EMG showed no abnormalities, and EEG revealed no epileptiform activity.

During the patient's follow-up examinations, similar symptoms were observed again, leading to the administration of IVIG treatment two more times at 3-month intervals. Since no remission was observed after the last IVIG treatment, it was decided to initiate rituximab therapy.

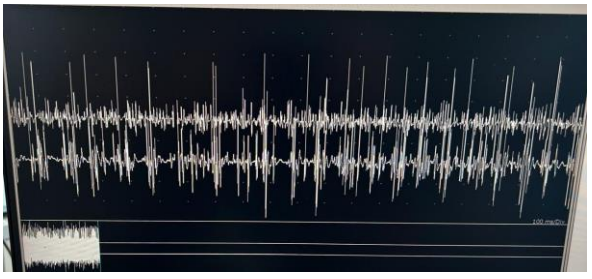

Figure-1. Both agonistic and antagonistic muscle contractions can be seen in this EMG finding.

DISCUSSION

Stiff Person Syndrome (SPS) is a rare autoimmune neurological disorder. Its pathogenesis involves the autoimmune disintegration of gamma-aminobutyric acid (GABA)-mediated inhibitory interneurons in the spinal cord (1). This disruption leads to hyperexcitability of anterior horn cells, resulting in simultaneous contractions of agonist and antagonist muscle groups (1). Consequently, patients experience painful muscle spasms and rigidity, primarily affecting the lower limbs, paraspinal muscles, and axial muscle groups. The antibody most commonly associated with SPS is Anti-GAD, detected in 88%-98% of patients with classical SPS (2). Studies showed that the higher the Anti-GAD levels are, the more resistant the SPS becomes. Our patient’s serum Anti-GAD level was 11.28 IU/mL, presenting with refractory SPS, which contradicts existing research (1). However, it is important to note that the Anti-GAD test was performed after the patient received IV methylprednisolone, which may have lowered the Anti-GAD titters.

In classical SPS, prominent symptoms include rigidity and stiffness of the lower limbs, thoracolumbar, and abdominal muscles; painful spasms that may be triggered by stimuli such as noise, emotional stress, or tactile contact; and hyperlordosis-like deformity caused by stiffness and contractions of the thoracolumbar paravertebral muscles (3). However, studies have identified additional, less common symptoms associated with SPS, such as epileptic seizures, excessive sweating, persistent itching, urinary retention, constipation, vertigo, diplopia, dysphagia, and cranial neuropathies (3-5).

Epileptic seizures, while rare, can occur in SPS, particularly in patients with elevated anti-GAD antibody levels. (4). Generalized tonic-clonic seizures are most common, but focal seizures have also been reported. EEG findings in these patients often reveal epileptiform activity. The mechanism behind these epileptic seizures is mostly unclear. Still, it is suspected that the cause of these seizures is anti-GAD antibodies inducing hyperexcitability by inhibiting GABAergic pathways and decreasing the conversion of glutamate to GABA, resulting in excessive excitatory neurotransmission due to increased glutamate levels (1). In our case, EEG demonstrated sharp slow-wave activity in the right temporo-occipital region, which resolved following IVIG therapy.

EMG is a valuable diagnostic tool for SPS, as it detects characteristic electrophysiologic findings, including simultaneous contractions of agonist and antagonist muscle groups (6). These contractions are spontaneous and simultaneous but exhibit normal motor unit characteristics. EMG abnormalities are typically localized to the lower extremities and lower lumbar paraspinal muscles. In our case, EMG played a crucial role in confirming the diagnosis.

The treatment of SPS can be divided into two categories: symptomatic therapy and immunotherapy. In symptomatic therapy, GABAergic treatments such as benzodiazepines or baclofen can be used to manage stiffness and painful spasms. In immunotherapy, the main treatment for SPS is IVIG. Research on plasma exchange therapy has shown conflicting results, with some patients experiencing improvement while others show no response (7). In more resistant cases, rituximab can be used as a long-term treatment.

CONCLUSION

SPS is a rare neurological disorder with a diverse range of symptoms. While rigidity and spasms are the primary features, clinicians should also consider less common manifestations such as epileptic seizures, brainstem involvement, and urinary retention when diagnosing or monitoring SPS.

Conflict of interest: None of the authors have conflict of interest to declare.

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