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Case Report

An interesting cause of wrist drop: The crow position in yoga and hereditary neuropathy with liability to pressure palsies

Kubra Isik[1], Zeki Odabaşı[2]

[1]Department of Neurology, Suruç State Hospital, Şanlıurfa, Türkiye
[2]Department of Neurology, Gülhane Medical School, Ankara, Türkiye

ABSTRACT

Hereditary neuropathy with liability pressure palsies (HNPP) is usually caused by compression and is an episodic, painless, recurrent hereditary neuropathy with focal motor and sensory involvement. It begins in adolescence and young adulthood. The most commonly affected nerves in HNPP are the ulnar, peroneal, radial, and median nerves. In this article, we present a 31-year-old female patient with a previously undescribed case of HNPP, which presented with wrist drop due to the trapping of the radial nerve in the spiral groove after the crow position in yoga.

Keywords: Compression, neuropathy, radial.

Hereditary neuropathy with liability pressure palsies (HNPP) is usually caused by compression, and it is an episodic, painless, recurrent hereditary neuropathy with focal motor and sensory involvement. Most cases of HNPP are caused by the deletion of the 1.5Mb region on chromosome 17p 11.2, including peripheral myelin protein 22 (PMP22).[1] Charcot-Marie-Tooth type 1A and HNPP PMP22 mutations are more common in HNPP than hereditary neuropathies. Studies have shown that the rate of the PMP22 mutation in HNPP patients is 7-16/100,000. In nerve conduction studies, it is seen that there are focal conduction abnormalities in the entrapment regions. In most patients, focal motor delaying is present in the areas of the entrapment. The ulnar nerve can be trapped in the elbow, the peroneal nerve in the head of the fibula, and the radial nerve in the spiral groove.[2] Certain joint positions often facilitate the manifestations of the symptoms in HNPP. Positions that cause compression, such as leg crossing, sitting on the knees for a long time, or leaning on the elbows for a long time, may induce the symptoms of HNPP.[1] Herein, we present a previously undescribed case of HNPP, which presented with wrist drop due to the trapping of the radial nerve in the spiral groove after the crow position in yoga.

CASE REPORT

A 31-year-old female patient was admitted to our clinic due to weakness in the right hand. In the history, it was learned that the patient had difficulty holding objects and had weakness in the right hand the next day after she forced her wrist in an extended position by placing her right hand on the ground while doing yoga. There was nothing particular in the disease history. In the neurological examination, right wrist extension was 3-4/5 and right finger extension was 3/5. There was hypoesthesia on the dorsal aspect of the first finger of the right hand. The Achilles reflex was hypoactive bilaterally. Electromyography (EMG) was performed on the right upper extremity of the patient and revealed a prolonged distal motor latency (DML) in the median nerve, slow motor conduction

Corresponding author: Kubra Isik, MD. Suruç Devlet Hastanesi, Nöroloji Kliniği, 63800 Suruç, Şanlıurfa, Türkiye.
E-mail: drkbra4406@gmail.com

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velocity at the below-above segment in the ulnar nerve, and partial conduction block at the level of the spiral groove in the radial nerve. Therefore, further EMG examination was done with the suspicion of HNPP. In addition to the initial EMG findings, sensory nerve action potentials could not be obtained in the bilateral sural nerve, DML was prolonged in the left median nerve, and motor conduction velocity was moderately slow and F-wave latency was prolonged in the left tibial nerve.

It was learned that the patient had persistently tried the yoga position called the crow position for one month and had difficulty trying the position. In the crow position, the palms are placed on the ground, the knees are slightly bent, the proximal elbow is placed on the knee caps, and the body is lifted with the help of the hand, attempting to balance on that arm (Figure 1). In this position, we observed that the radial nerve could become prone to compression, particularly at the level of the spiral groove. Together with the EMG findings, the patient was diagnosed with HNPP presenting with a wrist drop due to the crow position in yoga. Subsequent investigations showed the patient has a PMP22 heterozygous mutation. Twenty sessions of 40-min transdermal electrical stimulation were applied to the patient in three months by the physical therapy department, and the patient recovered almost completely.

Figure 1. Crow position in yoga. The patient's knee is pressing on the radial nerve in the spiral groove.

DISCUSSION

Hereditary neuropathy with liability pressure palsies is an autosomal dominant inherited, acute, recurrent, painless focal neuropathy that occurs after minor trauma or compression. Patients usually present with a single, focal acute neuropathy.[2] In most patients, focal motor delaying is observed in entrapment areas in EMG. The most common compression areas are the ulnar nerve (at the elbow), the peroneal nerve (at the head of the fibula), and the radial nerve (at the spiral groove), followed by the brachial plexus and median nerve. Therefore, HNPP should be considered when a young patient presents with a wrist drop or ankle drop without trauma. In addition, sensory conduction is homogeneously slow and the sensory nerve action potential amplitude is low. After EMG, genetic tests are applied. Peripheral myelin protein 22 positivity is present between 20 and 64% of patients with HNPP and Charcot-Marie-Tooth type 1A. Patients may have pes cavus at a rate of 4 to 47%.[1] In a retrospective study of 46 patients diagnosed with HNPP by Takahashi et al.,[4] the sural nerve was affected in the nerve conduction study in most of the patients, and the median nerve motor conduction was prolonged in DML in most of the patients. The most frequently affected nerves in these studies were the ulnar, median, and peroneal nerves, respectively.[3,4]

Studies have shown that in the pathogenesis of HNPP, secondary axonal degeneration plays an important role in addition to dysmyelination.[5,6]

Symptoms of acute neuropathy usually disappear within days to weeks. Chronic motor deficit has been recorded at a rate of 10 to 15%.[1] Treatment is usually symptomatic. These patients should be advised to stay away from activities that will cause compression. Previously identified conditions that increase the risk of compression are sitting cross-legged for long periods of time, leaning on the elbows for long periods of time, working in occupations that require repetitive movements of the wrist, squatting, and rapid weight loss. The cause of wrist drop in the case we presented here has not been previously described in the literature. This case shows that the radial nerve may compressed at the level of the spiral groove in the crow position in yoga. Patients should be advised to avoid forcing certain positions, such as the crow position while practicing yoga, just as avoiding other mentioned specific activities is recommended. We also recommended our patient to quit yoga. Symptomatic treatment was performed.

In conclusion, HNPP presents with acute neuropathy and usually resolves within days or weeks and should be kept in mind in young patients who present with wrist drop or ankle drop due to the frequent involvement of the radial and peroneal nerves. If the clinician suspects HNPP on EMG and clinical examination, the patient should be thoroughly questioned for any activity that may cause compression.

Patient Consent for Publication: A written informed consent was obtained from patient.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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