A Patient-Invented Maneuver to Alleviate Freezing of Gait Using a Foot Loop Band

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Key Words

Freezing of gait · Parkinson's disease · Foot loop band · Cueing · Attention

Abstract

Freezing of gait (FOG) is a disabling gait disorder in parkinsonian patients characterized by the inability to initiate or continue locomotion. I herein present a 65-year-old man with Parkinson's disease who invented a unique method (foot loop band) to alleviate FOG, which has not been previously described in the literature. The mechanisms to alleviate FOG include not only facilitating mechanical weight shift, but also restoring internal cueing and driving motor commands for gait initiation. This patient-invented maneuver may be recommended for patients having intractable FOG, because it is portable, cheap and safe.

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Introduction

Freezing of gait (FOG) is an episodic and disturbing gait disorder in parkinsonian patients characterized by the inability to initiate or continue locomotion [1, 2]. When a patient attempts to lift a foot to step forward, the foot is 'stuck' to the ground, sometimes with trembling of the legs, making the patient feel as if his or her foot is glued to the ground [1]. Pharmacological treatment is only partially effective in reducing FOG [1, 2], but auditory or visual cues are sometimes helpful [3–5]. I herein present a patient who developed a unique method to alleviate FOG, which has not been previously described in the literature.

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Case Report

A 65-year-old right-handed man noted tremor in his arms at the age of 44. He was diagnosed with Parkinson's disease, and treatment with levodopa and trihexyphenidyl was started. Although dopamine agonists were soon added to his treatment regimen, he developed the wearing off phenomenon at the age of 50, and experienced FOG in the off-state at the age of 52. At the age of 61, he invented the foot loop band to alleviate FOG. At that time, he had moderate rigidity and tremor predominantly on his right side, with shortened strides and turning hesitation (fig. 1a; online suppl. video 1; for all online suppl. material, see www.karger.com/doi/10.1159/000369059). He had a strong sensation of his feet being glued to the floor while turning. However, he was able to overcome turning hesitation by pulling up the band looped around his right foot (fig. 1b; online suppl. video 2). The stride length during straight-line walking also increased. He used this band only during the off-state, because FOG was not evident in the on-state. He has been using this band quite comfortably for more than 5 years.

Discussion

To our knowledge, there have been no reports describing a similar method to overcome FOG. Several mechanisms are considered to underlie his maneuver. (1) Lifting the right leg vertically with this band facilitates a lateral weight shift to the left leg and leads to an easy clearance of the right leg at the onset of the swing phase [5]. In general, freezers have difficulty in walking horizontally, but vertical leg movements such as when climbing stairs are preserved [5, 6]. (2) Simultaneously using both a hand and a leg represents a different and more consciously driven motor program than that used in normal automatic walking and turning, which is disrupted in patients with FOG [6, 7]. (3) Finally, this maneuver helps focus one's attention to the task of walking and restores internal cueing and internal driving [4]. A combination of the above-mentioned mechanisms may contribute to the alleviation of FOG in this patient using this maneuver.

The most stimulating point in this case is that the patient himself developed this method, and that he has been benefiting from it for more than 5 years. Clinicians who learn a new method of overcoming FOG from their patients have to extend the idea to other patients who suffer in a similar way [6]. Since many patients with FOG still have difficulty in overcoming it, it is worthwhile to try this inexpensive and safe method. Finally, this report shows the importance of developing an individually tailored approach, considering the specific needs and circumstances in each patient with FOG.

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Disclosure Statement

The author declares no conflicts of interest.

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Fig. 1. **a** The patient shows turning hesitation and needs to touch the wall to make a safe turn. **b** By pulling up the band with his right hand, the patient can turn easily.