

Received: 2019.07.20 Accepted: 2019.08.14 Published: 2019.10.29

# Case Report on Fear of Falling Syndrome: A Debilitating but Curable Gait Disorder

Authors' Contribution: Study Design A Data Collection B Statistical Analysis C Data Interpretation D Manuscript Preparation E Literature Search F Funds Collection G

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Patient: Male, 70 Final Diagnosis: Fear of falling syndrome Symptoms: Inability to get up from a chair and ambulate independently Medication: — Clinical Procedure: Lumbar puncture Specialty: Neurology

Objective: Rare disease Background: Fear of falling syndrome is a rare and often-missed disorder among patients with new-onset gait abnormality. The disorder is often mistaken for an organic neurologic problem, with some considering it to be a medical emergency.

Case Report: This case report presents a 70-year-old man who presented to the Emergency Department due to inability to rise from a chair or ambulate independently. Onset of his chief complaint occurred subsequent to a traumatic fall in a public location. He underwent extensive workup, and an organic neurologic cause was ruled out. He was subsequently diagnosed with fear of falling syndrome after obtaining a detailed fall history, as well as utilizing a verified survey (the Falls Efficacy Scale-International). After extensive inpatient treatment, the patient improved significantly. However, upon discharge to a skilled nursing facility, he was not offered the recommended treatment. When he was readmitted for an unrelated reason 3 months later, he had regressed to the state he was in at the time of prior admission.

Conclusions: This case presents a rare debilitating but reversible gait disorder, and highlights the importance of assessing "fall history" and fear of falling in older adults. Uniquely, this case presents the rapid fluctuation in outcomes dependent on treatment, and what happens when a patient fails to complete treatment regimens. The report also provides an overview of fear of falling with the corresponding gait disorder.

MeSH Keywords: Accidental Falls • Gait • Neurology

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/918879

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## Background

Fear of falling (FOF) is a common disorder in older adults, but the debilitating presentation of fear of falling gait is often missed and is mistaken for organic neurologic conditions [1].

In 1982, Murphy and Isaacs identified a cohort of 36 patients in which, after a fall, several were unable to walk unsupported and presented with a significant proclivity to clutch and grab, along with increased short-term mortality [2]. Since then, fear of falling syndrome (FOF) has been better characterized as the psychological trauma endured after a fall, which results in perpetual anxiety about falling or loss of confidence in balance abilities [3–5]. This subsequently limits daily activities to the point that physical capabilities are lost [3–5].

Recent research shows that FOF does not require one to have fallen; rather, the cause appears to be multifactorial, with an interplay of physical, psychological, and functional influences [6]. Moreover, FOF itself is suggested to be more pervasive and a more serious problem than falls in the elderly [6]. Missed diagnosis of post-fall syndrome and fear of falling syndrome can have detrimental consequences, with some considering FOF a medical emergency requiring immediate treatment [7].

This case report presents an often-missed disorder in patients with a new-onset gait abnormality. We present a case of a debilitating but rapidly reversible psychogenic gait disorder (FOF syndrome), which highlights the importance of assessing “fall history” and fear of falling in older adults. The report also provides an overview of FOF with the corresponding gait disorder.

## Case Report

We present the case of a 70-year-old man who presented to the Emergency Department, at the request of his daughter, due to an inability to get up from a chair and ambulate independently. He had no prior gait disorders or neurologic signs and symptoms. The disorder started 1 month prior to admission, when he experienced a traumatic fall in the lobby of a busy hospital. At the time of the fall, the patient tripped on his cane and spilled his coffee. This resulted in a false cardiac arrest code being called, which drew a rush of personnel to his side. He did not experience any injuries from the fall. Prior to this event, the patient was living independently and ambulating easily with a cane. He was able to shop, cook, and dress himself. The patient was now restricted to a wheelchair.

His past medical history was notable for hyperlipidemia (40 mg atorvastatin daily), diet-controlled diabetes mellitus type 2, asymptomatic bradycardia, hypertension (20 mg lisinopril daily), chronic kidney disease stage IV, and chronic hiccups

(10 mg baclofen daily). His family history was unremarkable. His social history was notable for past heavy drinking per family (unquantifiable).

His physical exam results were notable for a blood pressure of 190/60 without orthostatic changes, and a pulse of 52. He was friendly and cooperative. His affect was appropriate to context, mood was euthymic (“okay”), and cognition was normal. A cardiac exam was notable for a 4/6 systolic crescendo-decrescendo murmur in the right upper sternal border. A neurologic exam demonstrated normal facial expressions, speech, and tone. Strength in all extremities was 5/5, without tremor, bradykinesia, or abnormal muscular tone. He had normal proprioception, vibration, and pain and temperature sensations. His reflexes were 2+ and he had flexor plantar reflexes (negative Babinski sign). He was unable to stand independently, requiring 2-person assistance. While walking with a 2-person assist, he gripped firmly to the 4-legged walker, and continuously sought reaffirmation he was being held and that he would not be released. He also continuously emphasized he could not stand/walk alone. Slower and shorter steps with broad-based stance were noted. He demonstrated extreme caution with each step, but he lifted his feet to an appropriate height.

The patient’s comorbidities were all extensively assessed and addressed, including stabilizing his blood pressure to baseline with lisinopril and furosemide. Hepatic function tests, blood glucose, metabolic panel, urinalysis, complete blood count with coagulation studies, thyroid function tests, vitamin B12 (545 ng/L), cardiac (including EKG), and pre-albumin tests were all within normal limits. A nephrologist consult further assessed the patient’s chronic kidney disease, and exacerbations due to diabetes were also ruled out.

Due to presentation of a slightly broad-based gait, self-described “wobbliness,” and a history of recent forgetfulness per family (urinary incontinence could not be assessed as he had a long-term suprapubic catheter due to obstructive uropathy), he was evaluated for normal pressure hydrocephalus. MRI demonstrated dilated ventricles without cerebellar degeneration or evidence of prior cerebrovascular accident. Lack of improvement after cerebrospinal fluid removal through lumbar puncture reduced the likelihood of normal pressure hydrocephalus (but of note, the tap test does not rule out normal pressure hydrocephalus) [8]. A formal neurology consult did not find any neurologic deficit.

The patient scored 41/64 on the Falls Efficacy Scale-International (FES-I) scale [9]. When asked what he believed was holding him back from walking, he explicitly stated that he was afraid of falling. He attested “no one in the world has a greater fear of falling than I do.” He believed nothing was physically wrong with him, but rather his fear of falling was holding him back.

He believed if he could overcome his fear of falling, he would be able to walk again. He asked to see a psychiatrist to help him overcome his fears.

He was started on escitalopram 5 mg daily at bedtime to manage his anxiety, which was continued after discharged and managed by an appropriate outpatient provider. He underwent daily cognitive behavioral therapy addressing his FOF and was provided encouragement. He also received skilled physical therapy 5–6 times per week.

By the third day of treatment, he showed remarkable improvement, requiring only single-person assistance for ambulatory support. By the end of 5 days, he had achieved a significant increase in walking distance (using a walker). He required minimal single-person assistance during walking and none during standing.

Another important aspect of treatment involved education of the family about FOF gait and the required treatment regimen. In particular, the family was educated about how the patient was not malingering and suffered from a true disorder, with a positive prognosis if treated appropriately. Upon discharge to a sub-acute rehabilitation facility, the patient was also set to begin group Tai Chi exercises for older adults. However, upon discharge to a skilled nursing facility, he was not offered the recommended treatment (cognitive behavioral therapy with skilled physical therapy). When he was readmitted for an unrelated reason 3 months later (as an elderly diabetic, he was admitted to the inpatient medicine ward for a urinary tract infection), he had regressed to the state he was in at the time of prior admission.

## Discussion

### Epidemiology

Among older adults (65 years or above) in the United States, 36% were found to be moderately or very afraid of falling [10]. Those more likely to have FOF were women, those aged 75 or older, single, and with lower income [10–14]. Men were found to under-report FOF due to the associated stigma of reporting fears [5,15].

Research supports a temporal relationship between a recent fall and subsequent development of FOF [10,12,13,16,17]. After falling, 29–92% of older adults develop FOF [18,19]. Notably, injury from a fall does not increase risk of FOF [10,12,14,18,20,21]. There is also a cyclic effect that occurs after the initial fall, with fear of falling increasing the risk of a subsequent fall, and in turn further pushing the patient to self-limit functionality due to fear of standing or walking [12].

### How to identify fear of falling: Falls Efficacy Scale-International

The initial workup of this patient first involved ruling out organic causes of his gait instability based on history and physical exam, which included a comprehensive neurological exam. Potential organic causes included alcoholic cerebellar degeneration, vascular dementia, and normal pressure hydrocephalus.

Patients can be objectively assessed by the Falls Efficacy Scale-International (FES-I) scale [9]. The assessment expanded on the prior Falls Efficacy Scale (FES), adding 6 new questions (items 11–16) for individuals who are more active than most [9,22]. FES-I consists of 16 questions that assess concerns of falling during physical and social activities, with each question graded on a 4-point scale (1=not at all concerned, 2=somewhat concerned, 3=fairly concerned, 4=very concerned) [9]. The scores are summed to a total, ranging from 16 to 64, with higher scores indicating greater FOF [17]. Cut-points differentiate between low, moderate, and high concern about falling (low 16–19, moderate 20–27, and high 28–64), with the mean score and standard deviation being  $22.6 \pm 6.4$  for older adults, irrespective of falling history [23]. Our patient was approximately 3 standard deviations above the mean and was in the category of high concern for falling, with a score of 41.

Overall, the FES-I target population is older adults either with or without FOF [9]. The FES-I has a Cronbach's alpha of 0.96, indicating strong internal consistency, with the items on the test having shared covariance and measuring the same underlying concept [9]. Likewise, the test-retest reliability or interclass correlation coefficient was 0.96, demonstrating excellent internal validity [9]. In addition to accurately predicting future falls, the FES-I accurately predicts physiological fall risk, muscle weakness, overall disability, and depressive symptoms [23].

FES-I was developed by the Prevention of Falls Network Europe (ProFaNE), a group of European academic centers studying the psychology of falling and fall prevention [24]. Twenty-nine translations of the FES-I have been made by the University of Manchester and with the original can be found at <https://sites.manchester.ac.uk/fes-i/>.

### Specific ambulatory traits of fear of falling gait

When the term “cautious gait” or FOF gait was first coined by a team from the Institute of Neurology at University College London, several patterns in the ambulation were noted, including those observed in our patient [25]. Observed traits included a slightly lowered center of mass (crouched posture), broader base, and shorter stride – secondary to perceived postural instability [25–28]. No shuffling of feet and no diminishment of foot-floor clearance were observed in our patient [25].

Recent controlled research has found that patients with FOF have a slower walking gait velocity, yet other balance and gait parameters were unaffected (e.g., stride-length variability, stride-time variability, mediolateral angular displacement, and mediolateral angular velocity) [29]. Overall, the study concluded that patients with FOF adapted their gait mechanism to enhance balance, without demonstrating decreased balance control [29]. One hypothesis, which accounted for the balance adaptation, noted that anxiety concurrent with FOF taxes the cognitive demands required for gait and balance control, yet the same study found the performance of dual tasks in FOF gait were unaffected, thus contradicting the hypothesis [29–31].

In contrast, for static patients, several studies have noted decreased balance and postural control – specifically, increased postural sway and stiffness [32–34]. Another study found retropulsion in stance and anxiety about movement to be the most common findings in FOF patients [7].

### Management and treatment

Appropriate interventions can curtail morbidity and mortality in patients with FOF gait. Although there is a dearth of clinical trials examining intervention efficacy, the overarching management plan involves patient education with reassurance, physical therapy, and treatment of the underlying anxiety (with psychology and pharmacology) [35].

The cornerstone of treatment involves establishing confidence and perceived control over falls [35]. Education involves counseling on fear of falling, managing falls, motivating the patient to overcome self-defeating thoughts, and instilling confidence in the patient's abilities to control fear and to avoid falling [37–40]. Randomized controlled trials have found that patients undergoing appropriate cognitive-behavioral changes can reverse their cycle of activity restriction and gait abnormalities [37].

With education, patients should also engage in exercise and physical activity to reduce fall risk and increase perceived environmental control [37]. Performing a home safety checklist and conducting a home assessment with appropriate safety modifications has been found to improve a patient's perceived environmental control [38,41]. Addressing other causes of falls is also vital, such as consolidating the patient's medications to reduce the risk of drug-induced falls. Classes of medications associated with falls include: anticonvulsants, benzodiazepines,

opioids, antipsychotics, sedative-hypnotics, anticholinergics, antihistamines, muscle relaxants, antihypertensives, and antidepressants (tricyclics, fluoxetine, paroxetine, sertraline, fluvoxamine) [42,43]. Although not all medications that increase the risk of falls can be discontinued, an attempt should be made to either switch the patient to a safer alternative or limit the medication to the lowest effective dose [42,43].

Additionally, patients should be trained to be more assertive [6]. Assertiveness training involves learning to ask for assistance when in a fearful situation, as well as becoming comfortable discussing one's fear, as encouragement by family/friends to be more open and assertive promotes better outcomes [6]. Those able to openly discuss their FOF with family, friends, and healthcare providers were found to more likely remain physically active [38].

The greatest benefits from overcoming FOF were found with community or home-based interventions continued for at least 4 months [44]. Physical therapy with eventual transition to long-term group fitness programs was found to significantly improve balance and mobility and to decrease fall risk [45]. Specific therapies such as daily group Tai Chi or chair exercises have also been found to be helpful [44–46]. In addition, medical issues contributing to falling should also be addressed, along with mental health problems such as anxiety and depression [47].

### Conclusions

Overall, through a multidimensional and multidisciplinary approach, emphasizing confidence building, cognitive-behavioral changes, education, assertiveness training, and environmental modification, FOF gait can be reversed. However, as uniquely noted in our case, without follow-through with treatment, patients are at significant risk for regression.

Moreover, this report presents a commonly missed new-onset gait abnormality, which is debilitating but rapidly reversible. The case also highlights the importance of assessing “fall history” and fear of falling in older adults, while providing an overview of FOF with the parallel gait disorder.

### Conflict of interests

None.

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