

Persistent Postural-Perceptual Dizziness (PPPD)*

Conceptual Basis

This is a maladaptive hyper-vigilant hyper-visual response to a threat.

PPPD represents an abnormality of how the brain is processing information related to movement and is therefore a software rather than hardware issue. It is believed that this disorder generates symptoms due a mismatch between actual and expected sensory signals. This causes a level of threat to be attributed to the sensation, which in turn can increase the awareness, hypervigilance, and perceived level of threat. It is amenable to more cognitive approaches to physical rehabilitation.

The causative event may be either an acute disturbance in the balance system (or a decompensation from a previously compensated vestibular loss) **or** chronic fatigue, severe physical stress (illness, surgery, etc.), severe emotional stress, and sometimes with the institution of a vestibular suppressant medication.

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The PPPD patients' hypervigilance causes the brain to detect normal bodily sway and interpret it as a danger signal, which then provokes : -

- i) A fight and flight mechanism with anxiety
- ii) A strong visual dependence thus confusion with busy visual environments such as crowds, driving and computers.
- iii) "Ghosting" of vision - a sense of "blurring" or "delay" or delayed "catch-up" in their vision.

A vicious cycle to ensue.

Therapy is based on desensitizing the limits of normal postural sway, alongside cognitive reframing, then the body learns to see postural sway as normal and something that does not need a safety reaction (fight or flight) towards.

Diagnosis

This is an important common cause of "dizziness".

It has 3 key features: -

- i) A long-standing complaint** of non-spinning "dizziness" on most days.
- ii) Associated with anxiety and low mood.

iii) Normal clinical examination.

The dizziness is described as with the following features: -

- a) Unsteadiness when upright i.e. “Unsteady on walking”, “Unsteady on feet”, “cannot feel the ground properly” “a feeling of toppling over” but not actually falling
- b) A feeling of altered conscious level e.g. “Lightheaded” but not fainting,
- c) A feeling of altered mental state e.g. an “Empty feeling in head”/”Brain Fog”,
- d) Difficult to describe dizziness

The sensation of spinning dizziness (“vertigo”) is very rare.

Symptoms are present most days, often increasing throughout the day, and may fluctuate.

The patient complains of diminished function, such as: -

Poor concentration, work difficulties, loss of confidence, poor motivation, panic attacks, low mood, poor sleep & anxiety.

The dizziness may be triggered or worsened by visual stimulation such as bridges, driving a car, empty rooms, long corridors, large crowds of people in a store or restaurant cinema, television & computers.

The dizziness may improve or resolve during sport activities (bicycling, tennis) or taking some alcohol.

When the patient is examined there is nothing abnormal.

Treatment

Diagnosis and Explanation

A clear positive diagnosis and explanation that the patient can work with. An understanding of how the nervous system has become sensitized can help desensitize it.

Vestibular therapy

Vestibular therapy works by desensitization. As the symptoms have built up, most people avoid moving their eyes, neck and body as much as they used to. Physiotherapy and specific vestibular physiotherapy can be useful to help desensitize the nervous system and start to overcome ingrained patterns of movement.

Mindfulness techniques help her allow the symptoms to be less threatening. It is important not to practice any body scanning mindfulness, as patients are already doing this too much as a consequence of this condition. Here are some useful resources:

Apps:

Headspace

Calm

UCLA mindful

Healthy minds

The mindfulness app

Breeth: Meditation

Insight Timer-Meditation App

Thrive

Catchit

Worry Tree

Websites and recordings:

www.oxfordmindfulness.org

<http://cdn.franticworld.com>

<https://poolemindfulness.co.uk/> <https://www.breathworks-mindfulness.org.uk>

<https://www.nhs.uk/conditions/stress-anxiety-depression/mindfulness/>

<https://www.bemindfulonline.com/>

Medication

a)PPPD

Amitriptyline 10mg, once a day at night for 4-6 weeks.

(<https://bnf.nice.org.uk/drug/amitriptyline-hydrochloride.html>)

Contraindications are an allergic reaction to amitriptyline or any other medicine, a heart problem, porphyria, liver or kidney problems, epilepsy, is pregnant, trying to become pregnant, or breastfeeding, have glaucoma, suicidal ideation or have type 1 or type 2 diabetes

The most *common side-effects* of amitriptyline are constipation, dizziness, dry mouth, feeling sleepy, difficulty urinating and headaches.

Rarely it is associated with a fast or irregular heartbeat, yellow skin, or the whites of the eyes going yellow as signs of a liver problem, a headache, feel confused or weak, or get muscle cramps as these can be signs of a low sodium level in the blood, suicidal ideation, and eye pain, a change in eyesight, swelling or redness in or around the eye.

b) PPPD + Tiredness in morning :-

The SSRI citalopram 20mg in the morning (up to 40mg in morning after 3-4 weeks) in patients with tiredness in the morning

Contraindications : Citalopram should not be taken if you have had an allergic reaction to citalopram or any other medicines in the past, have a heart problem – citalopram can speed up or change your heartbeat, have ever taken any other medicines for depression – some rarely used antidepressants can interact with citalopram to cause very high blood pressure, even when they have been stopped for a few weeks, are trying to become pregnant, already pregnant or breastfeeding, have an eye condition called glaucoma – citalopram can increase the pressure in your eye, have epilepsy or are having electroconvulsive treatment – citalopram may increase your risk of having a seizure
If you have diabetes, citalopram can make it more difficult to keep your blood sugar stable.

Common side effects happen in more than 1 in 100 people and include dry mouth, sweating a lot, being unable to sleep, feeling sleepy and feeling tired or weak

Serious side effects are rare and happen in less than 1 in 1,000 people. These include chest pain or pressure or shortness of breath, severe dizziness or passing out, painful erections that last longer than 4 hours any bleeding that's very bad or you cannot stop, such as cuts or nosebleeds that do not stop within 10 minutes, thoughts about harming yourself or ending your life, constant headaches, long-lasting confusion or weakness, or frequent muscle cramps – these can all be signs of low sodium levels in your blood (in severe cases low sodium can lead to fits or seizures), vomiting blood or dark vomit, coughing up blood, blood in your pee, black or red poo – these can be signs of bleeding from the gut, bleeding from the gums or bruises that appear without a reason or that get bigger (<https://bnf.nice.org.uk/drug/citalopram.html>)

c) PPPD + Anxiety and sleep disorders.

Mirtazapine (tetracyclic piperazinoazepine) in the evening, starting with 7.5 mg 0-0-0-1 tabl per day, increasing every week at first up to 15 mg or 30 mg in patients

Contraindications : Mirtazapine should not be taken if you have Cardiac disorders; diabetes mellitus; elderly; history of mania (discontinue if patient entering manic phase); history of seizures; history of urinary retention; hypotension; psychoses (may aggravate psychotic symptoms); susceptibility to angle-closure glaucoma.

Side-effects - Common or very common

Anxiety; appetite increased; arthralgia; back pain; confusion; constipation; diarrhoea; dizziness; drowsiness; dry mouth; fatigue; headache (on discontinuation); myalgia; nausea; oedema; postural hypotension; sleep disorders; tremor; vomiting; weight increased

Side Effects – Uncommon

Hallucination; mania; movement disorders; oral disorders; syncope

Side Effects - Rare or very rare

Aggression; pancreatitis

Side-effects - Frequency not known

Agranulocytosis; arrhythmias; bone marrow disorders; dysarthria; eosinophilia; granulocytopenia; hyponatraemia; jaundice (discontinue); QT interval prolongation; rhabdomyolysis; seizure; serotonin syndrome; severe cutaneous adverse reactions (SCARs); SIADH; skin reactions; sudden death; suicidal behaviours; thrombocytopenia; urinary retention; withdrawal syndrome

Pregnancy

Use with caution—limited experience; monitor neonate for withdrawal effects.

<https://bnf.nice.org.uk/drug/mirtazapine.html#indicationsAndDoses>

*This condition has had many previous names such as somatoform dizziness, postural phobic vertigo, psychogenic dizziness & functional dizziness.

**for at least 3 months.

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