



DR HO EU CHIN

Losing one's balance

My colleagues and I first met 74-year-old Mr P at Tan Tock Seng Hospital's multi-discipline balance clinic in May.

For two years, the retired clerk has been very unsteady on his feet after suffering an episode of severe vertigo, or hallucination of movement.

His problem got so bad that two people have to help him to walk.

We found that he also had untreated cataracts, poorly controlled diabetes and chronic pain in his knees and hips from osteoarthritis.

With the help of other medical teams, we managed his conditions and he started doing vestibular retraining exercises with the physiotherapists.

He responded well. Six months later, a steady Mr P was walking on his own and had resumed his usual social activities.

Balancing refers to our ability to maintain a stable upright orientation in our day-to-day activities. It happens automatically and we only miss it when the balance system malfunctions.

The ability to walk and run upright on two legs is almost unique to human beings.

Our ability to balance depends on the brain's capability to process and integrate sensory input together with the simultaneous coordination of our limb and eye movements.

The sensory input for balance comes from our balance organs or vestibules (deep inside our ears), what we see and proprioception (the ability to sense joint position).

Two important functions of our balance system are to maintain visual and postural stability.

These are achieved through the vestibular-ocular and vestibular-spinal reflexes which "automatically" and continually make adjustments and corrections to our muscle tones in response to the sensory input.

It is virtually impossible to keep completely still while we are awake.

Every time our head moves, there will be a corresponding movement of our eyes to ensure stability in our vision.

Malfunction of our vestibular system can result in vertigo in the acute stages. If there is a failure of recovery and central compensation, it can lead to imbalance or disequilibrium.

Patients frequently use the terms "dizziness" or "giddiness" to describe these vestibular symptoms, as well as non-vestibular symptoms like light-headedness and feeling faint and unsteady from lower limb weakness.



ST ILLUSTRATION: ADAM LEE

That is why an accurate understanding of the patient's symptoms is crucial in order for a correct diagnosis to be made.

THE AGE FACTOR

Like all other organ systems, our balance system declines with age, which is why older people tend to shun the thrill of roller-coaster rides.

Often, the presence of other medical problems can complicate the symptoms and delay their recovery.

For example, diabetes, hypertension and eye conditions can also worsen with age, further impacting the balance system.

Long-time diabetics may suffer from progressive damage to the nerves too.

They may experience decreased

sensation in their feet (peripheral neuropathy), which reduces the proprioceptive input to the brain.

Proprioceptive input tells the brain about the qualities – the evenness, hardness, grip and gradient – of the ground we are walking on.

A weakened proprioception can decrease the body's ability to adapt to the walking environment.

Diabetes can also cause autonomic neuropathy, which impairs the heart's ability to pump harder and faster when one suddenly stands up, resulting in light headedness or even fainting (syncope) episodes.

Narrowing of the arteries may also occur, which can compromise blood supply to the balance organs and the brain.

It is a major risk factor for stroke

and heart disease.

After suffering a stroke, one may experience weakness in the limbs that can affect the ability to balance properly.

Meanwhile, a person with heart disease may not be able to tolerate exercise well, resulting in a more sedentary lifestyle. Such an overall decline in mobility can accelerate muscle weakness.

Wear and tear of our joints is inevitable as we age, and this problem grows in tandem with an increasing life expectancy.

Aches and pains are major reasons why many elderly folk exercise less. Again, this contributes to muscle weakness.

Patients with painful joints also suffer from impaired proprioception.

Many elderly people will have visual impairment from presbyopia and other common age-related visual problems like cataract, glaucoma and age-related macular degeneration.

Our balance strongly depends on our eyes to provide appropriate visual feedback to our brains of our head position and movement in relation to our surroundings.

Impaired vision will negatively impact one's balance, and this problem will be even more pronounced in the dark.

Balance problems can lead to falls and injuries in the elderly. Sufferers may also lack the confidence to participate in daily social activities.

Together with other medical issues, balance problems can trap patients in a cycle of dependency and poor mobility.

Patients like Mr P are increasingly common as our population ages.

Their balance problems are extremely common and are frequently multi-factorial in nature.

A multi-disciplinary and inter-disciplinary clinical setting that involves doctors of various medical specialties, such as geriatric medicine, ear, nose and throat and neurology, can improve their care.

Allied health professionals – such as physiotherapists, vestibular therapists and audiologists – are also crucial in the team-based care of such patients.

Such integrated and seamless care is emphasised within the National Healthcare Group to better manage patients who, like Mr P, have complex health conditions.

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