

Case Report

Hand and Foot Deformities in Parkinsonism – A Case Report

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Abstract

Deformities of the hands and feet in Parkinson's disease (PD) may be mistaken for other more commonly occurring conditions. A case report of a 62 years old lady with Parkinsonism having such deformities is presented here.

Key words: Parkinsonism, deformities, striatal hands.

Introduction:

James Parkinson in 1817 reported in his article "An Essay on the Shaking Palsy"¹ the features of a disease that bears his name. Parkinsonism can be due to idiopathic Parkinson's disease (PD) or due to secondary causes like damage to basal ganglia by drugs like neuroleptics and anti-emetics, trauma, viral infections of the nervous system, cerebrovascular disease, toxins and neurodegenerative diseases like progressive supranuclear palsy and multiple system atrophy.² The four cardinal features of Parkinsonism are tremors at rest, akinesia (or bradykinesia), rigidity and postural instability. In addition, there are a number of other less recognised symptoms like postural deformities, autonomic dysfunction, cognitive and behavioural abnormalities and sleep and sensory loss. They add to the disfigurement associated with the disease, reduce dexterity, interfere with activities of daily living (ADL), disrupt gait, increase falls, and produce pain and

discomfort. These present an additional challenge to physicians involved in the care of these patients.

Case Report:

A 62-year-old lady presented with chief complaints of tremors in hands and difficulty in moving since the last 3 years. A few months after that, she started noticing deformities of the hands and feet, more on the left side as compared to the right. She consulted the neurology department in our hospital and was started on dopamine agonists without much improvement in symptoms. About a year later, she noticed stooped posture and further slowing of movements. After a few months, she started noticing bilateral weakness and was diagnosed as multiple brain infarcts on MRI. She was referred to PMR department for management of her deformities.

Vitals and general examination was normal. Higher mental function testing showed no abnormality except for slow speech. Neurological examination showed lead pipe type rigidity on the left side along with resting tremors. Power was 3/5 in shoulder, elbow and wrist and 2/5 in hip, knee and ankle on both sides with normal sensory examination for all modalities. Her hand functions were poor and she was not an independent ambulator.

Description of deformities:

Left hand (Fig 1)

- Flexion of all MCP joints
- Hyperextension of PIP joints
- Flexion of DIP joints
- Flexion and adduction of thumb
- Mild ulnar deviation of wrist

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Right hand (Fig 1)

- Flexion of thumb at MCP joint and hyperextension at IP joint

Feet (Fig 2)

- Clawing of toes on right side

Trunk

- Stooped posture

All limb deformities were fixed.



Fig 1- Hand Deformities in Parkinsonism



Fig 2- Deformities of the Feet

Investigations showed haemoglobin count of 13.1 g/dl with a total WBC count of 5500 per cubic mm. ESR in the first hour was 55 mm and C-reactive protein, rheumatoid factor and antineutrophilic antigen were all negative. Plain radiographs of her hands showed subluxation of metacarpophalangeal and proximal interphalangeal joints but preserved anatomy of the wrist joint with no erosions (Fig 3).

She was put on levodopa + carbidopa (100+25) thrice a day, benzhexol (1 mg) twice a day, clopidogrel (75 mg) once a day and atorvastatin (20 mg) at bedtime. She was also started on active assisted range of motion exercises,



Fig 3- Hand Radiograph showing Deformities with Normal Wrist Joint Anatomy

strengthening exercises, co-ordination and balance exercises and gait training with walker. For activities of daily living, she was advised a raised toilet seat and a spoon with built-up handle.

Discussion:

The terms “striatal hands and feet” were first used by Charcot in 1877 to report the distal limb deformities associated with Parkinson’s disease³. They are present in about 33% of patients with Parkinsonism and are more common in females⁴. The side of the deformity correlates with the side of initial symptoms. They are generally seen in advanced cases, but subtle deformity can be noticed in early disease as well, sometimes even before other manifestations are apparent.

Striatal hand consists of flexion of MCP joint, extension of PIP joints, flexion of DIP joints and ulnar deviation of wrist (not always seen) and striatal foot consists of great toe extension and flexion of other toes. Other deformities like camptocormia (stooped posture with flexion in the thoracic and/or lumbar spine), antecollis (neck drop that is more pronounced than expected when compared to the flexed posture of the trunk) and Pisa syndrome (lateral flexion of the trunk which completely disappears on lying down) may also be seen⁴.

The differential diagnosis of the hand deformities may include:

- Dystonia
- Rheumatoid arthritis
- Systemic lupus erythematosus (SLE)
- Dupuytren’s contracture
- Ulnar neuropathy

In primary dystonia, the deformities are mobile (in early cases), present during movement and disappear during sleep. Rheumatoid arthritis presents with warm, swollen and painful joints with erosions, osteopenia and decreased joint space in radiographs and inflammatory markers in serum. Systemic lupus erythematosus (SLE) arthritis is associated with ANA positivity and synovitis⁵.

The various theories proposed for the presence of deformities in PD include muscular rigidity, decreased central motor conduction time due to loss of inhibition by the extrapyramidal system leading to overactive muscle contraction, increased ligamentous laxity in women or unknown hormonal influence, sarcomere loss in muscles due to sustained muscle contraction leading to muscle shortening and deformity and use of ergot dopamine agonists like bromocriptine predisposing to fibrosis.

The treatment of the deformities may consist of levodopa, anti-cholinergics like bntropine, baclofen, benzodiazepines, botulinum toxin, tendon transfers or tendon lengthening procedures or neurosurgical procedures like pallidotomy, thalamotomy and deep brain stimulation.

Learning Points:

- Postural abnormalities are grossly overlooked in early Parkinsonism.
- Misdiagnosis of this condition is possible as it may mimic more commonly seen conditions.
- Contractures may be prevented by early recognition and mobilisations.

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