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Screening for Syphilis in Patients with Parkinsonism: Lessons from Case Report

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Case report

Syphilis 'the great imitator' can mimic many movement disorders leading to significant and harmful delays in diagnosing and treating syphilitic infection of the brain. We describe a case of positive Syphilis in a patient with young-onset rapidly progressive parkinsonism poorly responsive to levodopa. A 33-year-old well-nourished Hispanic male moved to the US in 2007 at age 22 and was referred for evaluation of young-onset parkinsonism with inadequate response to dopaminergic medications. He reported onset of resting tremor at age 29, initially on the left and now bilateral with retained asymmetry along with bradykinesia. This was followed by early balance impairment within two years and rapid progression. He had to quit his job as a fork lifter operator in 2018 and is unemployed. He reported sexual difficulty, including loss of libido, erectile dysfunction, and premature ejaculation. He admitted anhedonia and apathy. There were concerns for mild cognitive impairment, and he admitted passage hallucinations for 1 year.

Examination showed typical 4-8 Hz resting tremors bilaterally in hands, left leg, and jaw. Rigidity was evident throughout along with multifocal dystonia, including right arm and left foot. Unified Parkinson Disease Rating Scale (UPDRS) Part III score was 56, and Hoehn and Yahr Stage was 2.5. Sensory exam, Cranial nerves, Motor strength, and reflex examination was normal. Babinski sign was absent. His gait and posture examination were consistent with parkinsonism, with stooped posture. However, the patient was able to walk on heels, tiptoes, and Tandem gait was normal (less than 1 step-to-the-side in 10 feet walk); however, the Pull test was 1. Magnetic Resonance Imaging (MRI) of Brain was reported as normal. Blood work was significant for positive Rapid Plasma Reagin (RPR) test and was confirmed with syphilis antibody testing. A diagnosis of Syphilis was made, and patient was started on intravenous penicillin G treatment along with carbidopa-levodopa and rotigotine patch. Follow up is scheduled.

Parkinson's disease (PD) is the second most common neurodegenerative disorder after Alzheimer's disease and its prevalence rises with the increasing age and reaches around 1903/100,000 after age 65 years of age as compared to only 41/100,000 in 41-49 years of age [1]. Syphilis is a chronic infection caused by Treponema Pallidum that is often multisystemic. If left untreated, it can slowly progress to neurosyphilis or gummatous syphilis. During early neurosyphilis, cerebral vascular structures, cerebrospinal fluid, and meninges are usually affected, while the cerebral cortex and spinal cord parenchyma are afflicted in the late stage. Due to its ability to affect any structure in the central nervous system, symptoms produced by this inflammatory disease can mimic many different neurological diseases, particularly movement disorders, and can be very challenging to diagnose. Although the incidence of syphilis decreased sharply in the mid-20th century with the introduction of antibiotics, the total population affected by syphilis was estimated around 12 million at the end of 20th century [2].

Parkinsonism has been reported in patients with syphilis. Inflammation in the central nervous system, particularly basal ganglia and mesencephalic structure caused by neurosyphilis may play an important role in triggering underlying Parkinsonism [3]. Another mechanism can be basal ganglia strokes. Around 3% of all the syphilitic patients experience a cryptogenic stroke, and 74% of affected patients belonging to this category are younger than 50 [4]. Psychiatric and behavioral problems including delusions and hallucinations, depression, dementia, personality changes, and aggressive behaviors, have also been reported. A retrospective study evaluating 169 patients with movement disorders found 7 with neurosyphilis diagnosed with Parkinson's disease, laryngeal dystonia, corticobasal syndrome, and sensory ataxia. Six of seven patients had abnormal radiologic findings defining syphilitic disease of brain while all of them had RPR

and Treponema Pallidum Particle Agglutination (TPPA) positive. Among those seven patients, 4 patients had parkinsonism [5]. Our patient presented with typical parkinsonism with the young age of onset, rapid progression, and early cognitive impairment with poor dopaminergic response that tested positive on Syphilis testing with a confirmation. We recommend routine screening for syphilis in patients with parkinsonism and other movement disorders.

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