

# Case Report

## Brain Tumor as a Cause of Parkinsonian Tremors.

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### Introduction

James Parkinson in 1817 described for the first time a disease which he named "Shaking Palsy", its Latin synonym being "paralysis agitans"<sup>4</sup>. Some primary diseases of the central nervous system may present with parkinsonism as a rare symptom. Brain tumor is one of these rare causes<sup>3,5,7,9</sup>..

Brain tumor can cause the disease due to midbrain compression especially parasagittal and sphenoid ridge meningiomas<sup>1,3</sup>.

In this case report, we will discuss a patient who presented with typical parkinsonian tremors without any other signs of central nervous system involvement. On investigation (C.T. scan) he was found to have a huge brain tumor (Fig.1). He was operated for complete excision of the brain tumor. The tremors disappeared completely. It is an interesting rare case to be reported.

### Case report

A 50 years old male presented with one year history of right-sided tremors. Initially the tremors were mild to moderate but gradually became more severe and at the time of admission they were very violent and interfered with the daily routine of his life. These were more at rest and partially suppressed on doing some task. These were limited to the right side only with no spread to the opposite side at any time. There was no history of any associated central nervous system symptoms such as headache, vomiting, fits, visual deterioration or any focal deficits. There was no history of any other systemic illness such as diabetes mellitus and hypertension.

On examination, a healthy man having severe, typical, Parkinsonian tremors on the right side of the body. These were more in the upper limb than the leg. Other features of Parkinsonism such as bradykinesia and rigidity were absent. Further detailed central nervous system examination revealed no positive finding. Examination of other systems was also negative.

Along-with the routine investigations, C.T. scan of the brain was performed which showed a huge, well-defined, heterogeneously enhancing tumor in the left temporo-parietal region. It had mass effect causing compression of the lateral ventricle but surprisingly there was no surrounding brain oedema (Fig. 1).

After preparation and informed consent, the patient was operated. Under general endotracheal anaesthesia, left temporoparietal (Montreal) craniotomy was performed. Dura opened. There was a huge, encapsulated, moderately

vascular, soft-to-firm tumor, with multiple connective tissue septations dividing it into multiple loculi. The tumor was going to the base in the temporal fossa and was adherent to the dura on the petrous bone. Complete excision of the tumor done. Dura closed after haemostasis. Incision closed in layers.

As the patient recovered from anaesthesia, his tremors were completely gone, surprising all of us. Post-operatively, the patient remained well. He was sent home on 5<sup>th</sup>. post-operative day without any complications and no tremors at all. On histopathology report it turned out to be a *schwannoma*.

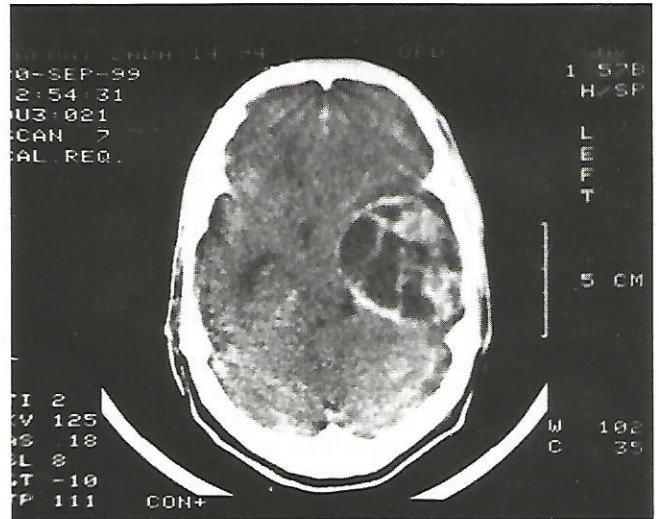


Fig.1: C.T. scan brain showing the tumor in left temporo-parietal region, the cause of Parkinsonian tremors in this patient.

### Discussion

Parkinsonism is a neurodegenerative disorder with symptom complex consisting of resting tremor, bradykinesia, rigidity, and impaired postural reflexes<sup>(1,3,7)</sup>. Parkinson's disease appears to be more common in Europe and North America (an estimated 100-200 persons with Parkinson's disease among every 100,000 persons) than in Japan, China, and Libya, where rates are generally lower (between 30 and 80 persons with Parkinson's disease among every 100,000 persons<sup>2</sup>).

Etiologically Parkinsonism can be classified as<sup>(3,6,8,10)</sup>:



- Parkinson's Disease (Idiopathic).
- Infections (encephalitis lethargica, encephalitides, syphilis).
- Toxins (manganese, carbon monoxide, carbon disulfide, cyanide, methanol).
- Pharmacologic causes (neuroleptics, reserpine, lithium, alpha-methyl dopa).
- Multiple system atrophies and degenerative diseases.
- CNS disorders (normal pressure hydrocephalus, cerebral infarction, brain tumors, trauma).
- Metabolic causes (hypothyroidism).
- Hereditary causes (Wilson's disease, Huntington's disease, Hallervorden-Spatz disease).

Some primary diseases of the central nervous system may present with parkinsonian tremor as a rare symptom. These include normal pressure hydrocephalus, stroke, tumor, trauma and subdural haematoma. Brain tumor is stated to cause the disease due to midbrain compression especially parasagittal and sphenoid ridge meningiomas<sup>1,3</sup>. Brissaud in 1895 described a case of parkinsonism due to a tuberculoma in the midbrain. Subsequently there have been numerous reports of parkinsonism secondary to brain tumors. Both meningiomas and gliomas have been reported in both supratentorial and infratentorial compartments. Only a small percentage of tumors involving the striatum will produce parkinsonism. Clinically, patients usually have contralateral tremor and rigidity associated with signs of raised intracranial pressure. Removal of the meningioma may result in the relief of all symptoms<sup>1,3</sup>.

The mechanism of tumors producing parkinsonism has been postulated as being due to involvement of the premotor frontal fibers projected to the basal ganglia or to direct infiltration or compression of the basal ganglia. Similarly, the mass effect produced by a middle cerebral

artery aneurysm has been linked to hemiparkinsonism in a single case report<sup>1,3</sup>

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