Question 1

A 62-year-old man is evaluated for a 5-month history of tremor of the right arm and hand. The tremor occurs with the patient at rest. The patient is right-handed and works as a clock repairman and has increasing difficulty doing his job because of the tremor and a progressive loss of dexterity. His medical history includes mild hypertension and hypercholesterolemia, and his medications are hydrochlorothiazide and simvastatin. The patient is single and lives alone. There is no family history of neurologic disease.

On physical examination, the patient is pleasant and alert; his voice is soft; and his facial expression is rather blank and unchanging. Vital signs are normal; BMI is 27. Funduscopic examination and cranial nerve function are normal. Limb strength is normal, but there is mild rigidity in the right arm. There is a 4-Hz resting tremor in the right arm. Deep tendon reflexes and sensory examination are normal. Arm swing is diminished, especially on the right, and his walking pace is slow. The patient maintains balance and steps backward when pulled gently from behind.

Which of the following is the most likely diagnosis of this patient's condition?

(A) Corticobasal degeneration
(B) Essential tremor
(C) Multiple system atrophy
(D) Parkinson's disease
Answer: (D) Parkinson's disease

This patient likely has Parkinson's disease, the cardinal features of which are tremor (usually resting tremor), a generalized slowness of movement (bradykinesia), and rigidity. Tremor is the presenting symptom in approximately 70% of affected patients. The tremor is usually unilateral but may extend contralaterally years after onset. The bradykinesia is often first noticed in lack of manual dexterity as in this patient. Rigidity is an increased resistance to passive movement about a joint and occurs in approximately 90% of patients with Parkinson's disease. Tremor and loss of dexterity are often the initial signs of Parkinson's disease. The frequency of the tremor is generally between 3 and 7 Hz. Other features of the disease that suggest the diagnosis in this patient are the masked expression, the soft speaking voice, and the diminished arm swing.

Corticobasal degeneration, essential tremor, and multiple system atrophy are all unlikely in this patient. Corticobasal degeneration is a rare, progressive, asymmetric movement disorder initially affecting one limb and having heterogeneous clinical features including akinesia, extreme rigidity, and a postural action tremor rather than the resting tremor in this patient. Essential tremor is also a postural action tremor and tends to be symmetric, rather than the asymmetric tremor in this patient; affected patients often have a family history of tremor. Multiple system atrophy is a heterogeneous degenerative disorder that is associated with parkinsonism, ataxia, and autonomic nervous system dysfunction. Parkinsonian symptoms may occur in the disorder, but tremor is not a prominent symptom.

References


**Question 2**

Which of the following would be most appropriate treatment for the patient described in the previous question at this time?

(A) Carbidopa-levodopa

(B) Pramipexole

(C) Primidone

(D) No treatment
Answer: (B) Pramipexole

Pharmacotherapy for Parkinson’s disease consists of dopamine replacement with levodopa or a dopamine agonist. In some patients with early-stage disease, treatment can be delayed unless the patient’s symptoms interfere with employment or other activities of daily living. This patient’s work, which requires a high degree of dexterity, is clearly compromised by his tremor, which affects his dominant hand; therefore, treatment is indicated.

Levodopa, in combination with the peripheral decarboxylase inhibitor carbidopa, is the most effective drug used in Parkinson’s disease. However, because of the patient’s young age at diagnosis (62 years), a dopamine agonist, such as pramipexole, would be the optimal first-line agent in this patient. However, it is likely that the patient will need levodopa therapy sometime in the course of his disease. Adverse effects of dopamine agonist therapy include nausea, vomiting, sleepiness, orthostatic hypotension, confusion, and hallucinations. Such adverse effects can be reduced by starting therapy with very small doses and increasing slowly to therapeutic levels.

As noted, therapy is indicated in this patient. Primidone is an anticonvulsant agent that is used for treatment of limb tremor in patients with essential tremor. It is not used in Parkinson’s disease.

Reference

Question 3

A 58-year-old man is evaluated for tremor of both arms and hands, which he first noticed about 8 months ago. The patient is a lawyer, and he is concerned that he can no longer take legible notes because of the tremor, and that he has been increasingly “clumsy” lately, dropping things at work and around the house. His speech and gait are not affected. The patient is married; his 54-year-old wife is healthy, and he has 2 grown healthy children; his mother, who died of acute myeloid leukemia at age 78 years, had a similar tremor during the last years of her life. The patient has a history of hypertension and hypercholesterolemia; his medications are amlodipine and simvastatin.

On physical examination, vital signs are normal; BMI is 25. There is a mild tremor of both hands and arms with the arms extended. There is also a slight head tremor but no dystonia. There is no noticeable tremor at rest. Arm and leg strength are good, and gait is normal.

Which of the following would NOT be an appropriate pharmacologic agent to control the patient’s tremor?

(A) Carbidopa-levodopa
(B) Clonazepam
(C) Primidone
(D) Propranolol
Answer: (A) Carbidopa-levodopa

This patient has a history and clinical findings consistent with essential tremor, a postural action tremor whose clinical features differ from Parkinson’s disease in various ways that are important for diagnosis. Essential tremor usually occurs with movement, whereas the tremor of Parkinson’s disease occurs at rest. More than half of patients with essential tremor have a family history of the disorder and are often younger than patients with Parkinson’s disease. Unlike patients with Parkinson’s disease, patients with essential tremor do not have rigidity, bradykinesia, or postural instability. The tremor usually becomes apparent in the arms when they are held outstretched, as in this patient, and typically increases at the very end of goal-directed movements such as finger-to-nose testing. Drinking alcohol usually suppresses symptoms in most patients.

The most common treatment for essential tremor is a beta-blocker, with propranolol being the most tested and therefore the usual first-line therapy. The American Academy of Neurology guidelines for the treatment of essential tremor concluded on the basis of systematic reviews and 4 prospective randomized controlled trials that the anticonvulsant primidone is effective for the treatment of limb tremor associated with essential tremor. The reduction in the magnitude of the tremor in patients treated with primidone was similar to that in patients treated with propranolol. Therefore, primidone would also likely be effective in this patient.

The benzodiazepine clonazepam is probably effective as a second-line therapy in patients with essential tremor, but it would not be preferred initial therapy in this patient. Carbidopa-levodopa is indicated for the treatment of Parkinson’s disease, which this patient does not have.

References


Question 4

A 70-year-old woman is evaluated in follow-up 6 months after being diagnosed with Parkinson’s disease. At that time, the patient presented with generalized slowness, some minor rigidity, and abnormal gait. A presumptive diagnosis of Parkinson’s disease was made, and therapy with carbidopa-levodopa, 25/100 3 times daily with meals, was prescribed.

On physical examination at this time, the patient appears anxious and somewhat confused. Her responses are appropriate but she is slow responding. The patient is a retired accountant, is a widow, and lives with her sister. Her only significant medical history is osteoarthritis of both knees; her only other medication is naproxen. She says that she has been compliant with therapy and keeps a log of her medication. Her movements are generally slow. She has postural instability, and her gait consists of short steps with decreased height, length, and cadence, with a broad base and outwardly turned feet. She has also fallen twice in the past month and had had increasing urinary urgency and 2 episodes of incontinence. The patient’s heart rate is increased somewhat, but other vital signs are normal; BMI is 21. There is a 4-Hz resting tremor in the left arm. Deep tendon reflexes and sensory examination are normal.

Which of the following would be the most appropriate next step in the management of this patient?

(A) Add a dopamine agonist to carbidopa-levodopa

(B) Administer a Mini-Mental State Examination

(C) Increase dose of carbidopa-levodopa to 50/200 mg 3 times daily

(D) Refer for MRI scan of the head
Answer: (D) Refer for MRI scan of the head

Failure to respond to therapy with carbidopa-levodopa or dopamine agonist for presumed Parkinson's disease should prompt reconsideration of the diagnosis. This patient should have an MRI scan of the head to evaluate for normal pressure hydrocephalus, which consists of pathologically enlarged ventricles with normal opening pressure on lumbar puncture. Gait difficulty is often an early symptom of hydrocephalus; the other common clinical features of the disorder are cognitive disturbance and urinary incontinence. The gait abnormality in hydrocephalus is characterized as “gait ataxia,” that is, short steps with decreased stride length and height, diminished cadence, and a broadened base with outwardly rotated feet. Postural stability is impaired, and some patients experience falls. MRI in normal pressure hydrocephalus shows ventriculomegaly; the treatment is ventricular shunting. Successful treatment has been shown to alleviate gait impairment and urinary incontinence and sometimes to improve cognitive function.

Because this patient does not have Parkinson's disease, modification of dopamine replacement therapy would not be effective. The Mini-Mental State Examination is not sensitive for the cognitive impairment in normal pressure hydrocephalus and would not be indicated in this patient.

References

Question 5

A 61-year-old man is evaluated for a 3-month history of tremor of both arms and hands. The tremor is present both at rest and with action. The patient is a retired financial analyst, is married, and lives with his healthy wife and a grown daughter. The patient was diagnosed with type 2 diabetes mellitus 10 years ago. He also has a history of hypertension and gastroparesis. His medications are metformin, insulin glargine, ramipril, and metoclopramide.

On physical examination, the patient is alert but anxious. Blood pressure is 148/88 mm Hg; other vital signs are normal; BMI is 32. He has a stooped posture. His speech is normal; he is alert and responsive, but his facial expression is calm and unchanged. His movements are slow and purposeful, and there is symmetrical rigidity of both arms and hands. Muscle strength is normal; there is some distal sensory loss. There is a 6-Hz resting tremor bilaterally and a postural tremor.

Which of the following is the most likely cause of the patient’s tremor?

(A) Corticobasal degeneration
(B) Drug-induced parkinsonism
(C) Essential tremor
(D) Parkinson’s disease
**Answer: (B)  Drug-induced parkinsonism**

This patient likely has drug-induced parkinsonism caused by therapy with metoclopramide for gastroparesis. Drug-induced parkinsonism is the most common form of secondary parkinsonism. Many medications, especially those that disrupt dopamine metabolism or block dopamine receptors, can cause parkinsonism, including neuroleptics, antiemetics, reserpine, and prochlorperazine, as well as metoclopramide. Metoclopramide causes parkinsonism in up to one third of patients who take the drug for a long time, and the condition is likely underdiagnosed. The parkinsonism is usually bilateral, with a postural or resting tremor, frank bradykinesia, and rigidity. In a patient with drug-induced parkinsonism, stopping the offending drug may reverse or alleviate the symptoms of parkinsonism.

Corticobasal degeneration, essential tremor, and Parkinson’s disease are all unlikely causes of this patient’s new tremor. Corticobasal degeneration is a rare, progressive, asymmetric movement disorder initially affecting 1 limb and having heterogeneous clinical features including gait impairment, dystonia, myoclonus, tremor, and slurred speech, and often the presence of alien limb phenomenon in which a limb moves without voluntary control. Essential tremor is also a postural action tremor and tends to be symmetrical, but there is usually no rigidity, bradykinesia, postural instability, or resting tremor. The cardinal features of Parkinson’s disease are resting tremor (which is usually unilateral), bradykinesia, and rigidity; postural instability is also sometimes present.

**References**


Question 6

A 70-year-old woman with a history of Parkinson’s disease is evaluated for difficulty sleeping, and fatigue. Parkinson’s disease was diagnosed 2 years ago when she was evaluated for the recent onset of a tremor of her right arm and hand and stiffness. Therapy with carbidopa-levodopa was started, and the parkinsonism symptoms were significantly alleviated. The patient is a retired librarian and works several days a week as a volunteer in a public library. She takes immediate-release carbidopa-levodopa, but sometimes notices an increase in symptoms between doses, especially at night, causing her to awaken early in the morning. She is able to sleep if she takes an additional dose of carbidopa-levodopa. The patient also has mild osteoporosis, and her only other medication is alendronate.

On physical examination, the patient is quiet, but alert and responsive. Vital signs are normal: BMI is 21. Her speech is slightly slurred and her facial expression is bland and static. Muscle strength, sensory examination, and deep tendon reflexes are normal. There is a mild resting tremor in the right arm and hand and mild right-sided rigidity.

Which of the following would be the most appropriate additional medication for this patient?

(A) Clonazepam before bedtime

(B) Extended-release carbidopa-levodopa before bedtime

(C) Sertraline

(D) Zolpidem
Answer: B Extended-release carbidopa-levodopa before bedtime

The most appropriate treatment for this patient's disordered sleep and subsequent fatigue is adding extended-release carbidopa-levodopa at bedtime. Difficulty sleeping is one of the most troubling nonmotor symptoms in patients with Parkinson's disease, affecting more than half of patients. This patient has a wearing off effect of levodopa during the night and an increase in motor symptoms, which is the likely cause of her waking up early in the morning. Extended-release carbidopa-levodopa has a longer duration of action than immediate-release form and taken immediately before bedtime it should alleviate the patient's early and frequent awakenings.

The patient has no history of other sleep disorders, such as restless legs syndrome, periodic limb movements of sleep, or REM sleep behavior disorder. Therefore clonazepam would not be indicated. In addition, this drug may cause impaired motor function and problems with balance and should therefore be used with caution in patients with Parkinson's disease. The patient's fatigue does not appear to be the result of depression. She is active and alert and does not show any signs of depression. Therefore, sertraline therapy would not be indicated. The patient's disordered sleep is the result of an increase in parkinsonian symptoms and not insomnia; therefore, therapy with zolpidem would not be indicated.

References


Question 7

A 68-year-old man with a history of Parkinson's disease is evaluated for involuntary movements of his face and arms. Parkinson's disease was diagnosed 5 years ago when the patient presented with a tremor of his right hand (his dominant hand). The patient is a professional pianist, and therapy with carbidopa-levodopa was started at diagnosis. The patient's symptoms have been well controlled with therapy until 6 months ago. The involuntary movements occur near the end of a dose and just before the next dose. Levodopa dosage was increased and the movements resolved until 2 months ago when they returned. The patient is now retired, and plays piano for local amateur groups; he is married and lives with his healthy wife. The patient also has aortic stenosis, and his only other medication is a beta-blocker.

On physical examination, the patient appears nervous and is perspiring profusely. His last dose of carbidopa-levodopa was 4 hours ago, and he says that he feels the symptoms beginning. There is a slight twitch on the right side of his face and an increased blinking reflex on that side. There is a noticeable tremor of the right hand. Respirations are increased, but vital signs are otherwise normal; BMI is 29. Cranial nerves are normal; biceps reflex is reduced on the left, as is the light touch sensation. He walks somewhat slowly and has a pronounced right-sided arm swing. He has good accuracy in the finger-nose-finger test.

Which of the following would be the most appropriate therapy for this patient?

(A) Add amantadine
(B) Add cabergoline
(C) Add entacapone
(D) Begin sustained-release carbidopa-levodopa
Answer: (C) Add entacapone

This patient has wearing off phenomenon, that is, an end-of-dose effect less than 4 hours after a dose of levodopa. Increasing the dosage of levodopa is effective in some cases, as it was initially in this patient. If the phenomenon recurs, however, an addition drug is indicated to control symptoms. Entacapone, a catechol-O-methyltransferase (COMT) inhibitor, prolongs the levodopa effect and reduces the "off" time when given with a dose of levodopa, thereby increasing the levodopa effect in patients with motor fluctuations and the wearing off phenomenon. Adding entacapone may allow a reduction in the total daily levodopa dose by up to 30%.

The dopamine agonist amantadine has not been shown to be effective in patients with the wearing off phenomenon and would not be indicated in this patient. The dopamine agonist cabergoline has been shown to result in a significant decrease in "off" time in such patients; however, the drug, in high cumulative doses and with long-term treatment, has been associated with an increased risk for cardiac valvulopathy and would therefore not be indicated in this patient with aortic stenosis. A practice parameter from the American Academy of Neurology issued in 2006 concluded that sustained-release carbidopa-levodopa did not decrease "off" time compared with immediate-release formulations and therefore would not be indicated in this patient.

References


Question 8

A 67-year-old woman with a history of Parkinson's disease is evaluated for increasing tremor, falls, and dyskinesias. Parkinson's disease was diagnosed 6 years ago when she presented with a 6-month history of a mild resting tremor of the left hand, left-sided rigidity, and a slightly unsteady gait. Treatment was delayed for 6 months, but when the symptoms increased, therapy with pramipexole was started, but the symptoms persisted and carbidopa-levodopa was added. Her disease was well controlled until 1 year ago when she noticed that her symptoms returned between doses; the effect of therapy seemed to be progressively shorter. The dosage of carbidopa-levodopa was increased, and amantidine was added without effect. Attempts to titrate the dose of levodopa to maintain therapeutic control were also ineffective. She also began experiencing involuntary jerky movements of both hands while therapy was otherwise effective. The patient is otherwise healthy and takes no other medication. The patient is a retired dentist who lives with her healthy husband.

On physical examination, the patient appears anxious and in some distress. She sits rigidly upright and holds both hands tightly. Her most recent dose of carbidopa-levodopa was 5 hours earlier, and her symptoms have returned. The left-sided tremor is apparent at rest, and she has left-sided cogwheel rigidity. She walks very slowly, and her gait is slightly unsteady. Occasionally, her left hand moves uncontrollably. Her facial expression is bland and unchanging, although her right check twitches twice during the examination. Her respirations are increased, but vital signs are otherwise normal; BMI is 24. Cranial nerves are normal; biceps reflex is reduced on the left, as is the light touch sensation. She has problems with balance. She walks slowly with pronounced left-sided arm swing. She has poor accuracy in the finger-nose-finger test.

Which of the following would be the most appropriate next step in the management of this patient?

(A) Increase the dose of levodopa
(B) Lower the dose of levodopa
(C) Refer for deep brain stimulation
(D) Switch to sustained-release carbidopa-levodopa
**Answer: (C) Refer for deep brain stimulation**

This patient is a good candidate for deep brain stimulation, the most frequently performed surgical procedure in patients with advanced Parkinson’s disease. Up to half of patients with Parkinson’s disease who have taken levodopa for at least 5 years experience major motor fluctuations and dyskinesia. As the disease advances, the effect of levodopa begins to wear off approximately 4 hours after each dose, resulting in the “wearing off” phenomenon which consists of alternating periods of the patient being “on” (that is, when symptoms are controlled) and “off” (when symptoms return). In some patients, like this one, dyskinesia peaks twice after each dose (diphasic dyskinesia) – when patients turn "on" and again as they begin to turn "off."

Deep brain stimulation has been shown in 1 randomized controlled trial to be more effective than best medical therapy in patients younger than 75 years with severe complications of Parkinson’s disease. Another trial found that in patients with advanced disease, deep brain stimulation was more effective than best medical therapy in improving “on” time without troubling dyskinesias, motor function, and quality of life at 6 months, but was associated with an increased risk of serious adverse events.

Increasing the dose of levodopa would worsen the patient's dyskinesia. Lowering the dose of levodopa may be effective in patients with sudden "off" episodes that may be the result of an excessive levodopa effect; that is not the case in this patient. Sustained-release levodopa should not be used in patients with severe or complex patterns of dyskinesia because absorption of the drug may be delayed and dyskinesia tends to progressively increase into the afternoon and evening.

**References**


Question 9

A 71-year-old man with a history of Parkinson's disease is evaluated for progressive fatigue. Parkinson's disease was diagnosed 5 years ago in the evaluation of a right-sided tremor and gait changes. Six months after diagnosis, therapy with carbidopa-levodopa was started. Pramipexole was recently added to his therapy. The patient is a retired fireman, and is divorced and lives alone. His daughter, who accompanies him on his evaluation, lives nearby and visits him 4 or 5 times a week. She helps with housework and mentions that the patient keeps the house clean and cooks his own meals. The patient used to volunteer at the local library, but now rarely goes out of the house and did not renew his season ticket for the local baseball team this year. The patient is a former cigarette smoker who stopped smoking 10 years ago after the diagnosis of COPD. His daughter mentions that he drinks about 3 cans of beer a night. The patient also has hypertension and mild COPD, and his medications include carbidopa-levodopa, pramipexole, hydrochlorothiazide, and salmeterol.

On physical examination, the patient is well-groomed, quiet, and lethargic; his breathing is heavy. His voice is soft and his verbal responses are sometimes inaudible; his daughter often answers questions put to the patient. The patient is oriented. There is a mild right-sided resting tremor. He is afebrile, blood pressure is 140/85 mm Hg, pulse rate is 74/min, respiration rate is 15/min, and BMI is 33 (he has gained 15 pounds in the past year). Cranial nerves are normal; biceps reflex is reduced on the right, as is the light touch sensation. He is stable when standing, with no problems with balance. He walks slowly, but his gait is steady. He becomes short of breath when walking.

Which of the following is the most appropriate next step in the management of this patient?

(A) Evaluate for Parkinson's disease dementia
(B) Measure liver enzymes and hematologic indices
(C) Refer for spiral CT scan of the chest
(D) Screen for depression
(E) Stop pramipexole
Answer: (D) Screen for depression

The patient likely has depression, which is associated with fatigue, social withdrawal, and mood and cognitive symptoms. Both COPD and Parkinson’s disease are associated with an increased risk for depression. There are various methods used for screening for depression, mostly self-administered questionnaires. One of the simplest is the Patient Health Questionnaire-2 (PHQ-2) consisting of the first 2 items of the PHQ-9; the PHQ-2 inquires about the degree to which a patient has experienced depressed mood and anhedonia over the past 2 weeks. Its purpose is not to establish a final diagnosis or to monitor depression severity, but rather to screen for depression. Patients who screen positive should be further evaluated with the PHQ-9 to determine whether they meet criteria for a depressive disorder. The PHQ-2 has been validated in at least 3 studies in which it showed wide variability in sensitivity. The primary question is, “Over the past 2 weeks, how often have you been bothered by any of the following problems?” The 2 items are “Little interest or pleasure in doing things” and “Feeling down, depressed, or hopeless.” For each item, the response options are “Not at all,” “Several days,” “More than half the days,” and “Nearly every day,” scored as 0, 1, 2, and 3, respectively. Thus, the PHQ-2 score can range from 0 to 6. A score of 3 points or more on this version of the PHQ-2 has a sensitivity of 83% and a specificity of 92% for major depressive episode. If the patient is found to be depressed, pharmacotherapy has been shown to be effective in depressed patients with Parkinson’s disease.

It is unlikely that the patient has Parkinson’s disease dementia; he has a mood disorder rather than a cognitive disorder that prevents him from performing executive functions. The patient may have an alcohol abuse problem that could be detected by measuring liver enzymes and evaluating for macrocytosis. However, depression is much more likely in this patient with steady gait and good balance. The patient may also have an occult lung cancer, but spiral CT scan would not be the next step in his evaluation. Although pramipexole may cause somnolence, the current anti-parkinsonism therapy seems to be effective in controlling his disease, and stopping an effective medication should not be the next step in managing his new fatigue.
Reference

Question 10

A 79-year-old man with a history of Parkinson's disease is evaluated for episodes of memory problems and confusion over the past 6 months. The patient got lost 2 months ago in a shopping mall and was brought home by the police several hours after having left home alone. He now no longer drives. The patient is a retired colonel in the United States Army. He lives with his 75-year-old healthy wife, and their son and daughter visit the home at least 3 times a week to check on their parents. Parkinson's disease was diagnosed 8 years ago when the patient developed a resting tremor, rigidity, and generalized slowness. Treatment was delayed, and then carbidopa-levodopa was started as symptoms worsened. Pramipexole was added 2 years ago as symptoms again worsened. The patient also has GERD, essential hypertension, and hypothyroidism, and his medications include carbidopa-levodopa, pramipexol, pantoprazole, ramipril, and levothyroxine. His wife, who accompanies him on this visit, is not sure whether he has been compliant in the past, and she has started watching the patient take his medication.

On physical examination, the patient appears frail and is distracted and unfocused; he tries to respond to questions but cannot get words out. His wife mentions that he had been an avid reader of military history but that he no longer reads. Examination of the ears, nose, throat, and eyes is normal, and his eyesight with glasses appears to be normal. When asked to stand and walk, the patient seems not to comprehend and when helped to his feet has trouble walking a short distance. The patient’s temperature is 97.7 °F; other vital signs are normal; BMI is 27. The patient has difficulty completing the Mini-Mental State Examination, and his score is 24/30; 1/3 on the recall section.

Results of laboratory studies, including complete blood count, metabolic panel, vitamin B\textsubscript{12}, and thyroid function tests, are normal.

Which of the following is the most likely diagnosis?

(A) Alzheimer’s dementia

(B) Multiple system atrophy

(C) Parkinson’s dementia

(D) Vascular dementia
Answer: (A) Alzheimer’s dementia

This patient has dementia as indicated by his score on the Mini-Mental State Examination. He likely has Alzheimer’s dementia, a disorder that is often difficult to distinguish from the dementia of Parkinson’s disease. Parkinson’s disease and Alzheimer’s dementia may, however, coexist in a patient. Parkinsonism may develop in patients with Alzheimer’s disease, but usually late in the dementia. In addition, the presence of aphasia, apraxia, and profound amnesia, as in this patient, are more characteristic of Alzheimer’s dementia than Parkinson’s dementia. The cardinal clinical features of Alzheimer’s dementia are memory impairment, language dysfunction and loss of semantic memory, apraxia, impairment of executive function, and such neuropsychiatric symptoms as apathy, social dysfunction, and disinhibition.

Dementia is common in patients with Parkinson’s disease, affecting up to 75% of patients, and may be an independent predictor of death in such patients. The dementia is considered subcortical (as opposed to the cortical dementia in Alzheimer’s dementia) with problems in decision-making and other executive functions, memory retrieval, and visuospatial perception. Aphasia and apraxia are usually not present. The memory impairment in Parkinson’s dementia is usually less severe than in Alzheimer’s dementia, whereas the visuoperceptive deficit is more pronounced in Parkinson’s dementia. Patients with multiple system atrophy with parkinsonism usually have well-preserved cognitive function; where cognitive dysfunction occurs it usually involves visuospatial and constructional function, verbal fluency, and executive function. Verbal memory seems to be unaffected. This patient has no history or current symptoms and signs of stroke or other cerebrovascular disease, and therefore, vascular dementia is highly unlikely as a cause of his dementia.

References


Question 11

An 82-year-old woman with a history of Parkinson's disease is evaluated because her daughter who is her home caregiver cannot control the patient who has threatened to harm her daughter for "stealing her money and trying to poison her with pills.” The patient has also claimed that her long-deceased mother was entering her room at night and trying to harm her. The patient had been healthy and active until Parkinson's disease was diagnosed 8 years ago. She is a widow, and her single daughter has moved back home to care for her mother. The patient was initially treated with carbidopa-levodopa; 2 years later, ropinirole was added when symptoms progressed and sialorrhea developed. Entacapone was added 1 year ago. The patient also has hypertension, mild cognitive impairment, and depression. Her medications include carbidopa-levodopa, ropinirole, entacapone, metoprolol, and selegiline.

On examination, the patient is agitated and uncooperative. She demands that her daughter leave the examining room. The patient is difficult to examine. However, vital signs appear to be normal. She refuses to be weighed or to be observed walking. She has a mild left-sided tremor. Routine laboratory tests, including electrolytes and thyroid function studies, are within normal limits.

Which of the following would be the most appropriate next step in the management of this patient?

(A) Administer quetiapine

(B) Administer trihexyphenidyl

(C) Stop carbidopa-levodopa, ropinirole, and entacapone

(D) Refer for psychiatric evaluation
Answer:  (A)  Administer quetiapine

Dopaminergic-induced psychosis, characterized by visual hallucinations and often paranoid delusions, is a somewhat common complication in patients with Parkinson’s disease. Hallucinations occur in up to 40% of patients, especially patients like this one with advanced disease. The atypical neuroleptic agents clozapine and quetiapine have been shown in some studies to be effective in treating the psychotic symptoms associated with Parkinson’s disease. However, clozapine is associated with granulocytopenia and requires hematologic monitoring. Quetiapine is, therefore, the most commonly used atypical neurolyptic agents for dopaminergic-induced psychosis and would be the appropriate next step in the management of the patient.

Adding an anticholinergic agent, such as trihexyphenidyl, might very well exacerbate the patient's psychotic state and would not be indicated. Stopping carbidopa-levodopa, roprinirole, and entacapone would likely result in a severe increase in parkinsonian symptoms, although dose reductions may be helpful while maintaining control of movement symptoms. Levodopa is required by most patients with Parkinson’s disease and should not be stopped, although carefully monitored dose reduction can be tried if psychosis persists. In this patient, the beta-blocker metoprolol may also be implicated in delirium, and a different antihypertensive agent should also be considered. Psychiatric referral is not indicated at this time.

References


**Question 12**

A 58-year-old man is evaluated for 3 episodes of falling in the past 6 months; twice he fell backward and once on his left side. He has also had difficulty swallowing and episodes of insomnia during that time. The patient is unmarried and had been previously healthy; he was a dedicated runner and exercised regularly, but he has discontinued most physical activity. He drinks alcohol moderately, does not use illicit drugs, and his only medication is a daily multivitamin. He is a journalist but has had increasing difficulties concentrating at work. There is no family history of neurologic disease.

On physical examination, the patient is alert and responsive; he is a good historian and has a slight stutter. Vital signs are normal; BMI is 25. His speech is rather slow and he has a bland facial expression. Cranial nerve examination shows an impairment in vertical gaze. There is no obvious tremor. Muscle strength and reflexes are normal. His posture is stiff, and there is resistance to passive movement of the neck and limitation of upward gaze. He is slightly unstable on his feet. He has a broad-based, slow, stiff gait with his knees slightly extended and arms abducted.

Which of the following is the most likely diagnosis?

(A) Corticobasal degeneration
(B) Multiple system atrophy
(C) Parkinson’s disease
(D) Progressive supranuclear palsy
Answer:  (D)  Progressive supranuclear palsy

The patient has the characteristic clinical findings of progressive supranuclear palsy, a neurodegenerative disorder and the most common of the atypical parkinsonian disorders, which also consist of corticobasal degeneration and multiple system atrophy. The cardinal manifestations of progressive supranuclear palsy are supranuclear ophthalmoplegia, falls (especially in a backward direction), insomnia, neck dystonia, parkinsonism, behavioral and cognitive impairment, and imbalance and difficulty walking. The most common initial feature of the disorder is a gait disturbance that results in falls. The disease is relentlessly progressive, and no treatment has been shown to reverse its natural history. Treatment is supportive and consists of speech, occupational, and physical therapy.

Corticobasal degeneration is a rare progressive asymmetric movement disorder characterized by various combinations of akinesia, rigidity, dystonia, focal myoclonus, ideomotor apraxia, and alien-limb phenomena. Parkinsonian features are present on examination and are characteristically asymmetric. Multiple system atrophy is a heterogeneous degenerative disorder that is associated with parkinsonism, ataxia, and autonomic nervous system dysfunction. There is usually an irregular, jerky postural and action tremor. Parkinson’s disease is characterized by a resting tremor, symmetric bradykinesia, and rigidity, as well as by response to levodopa.

References
