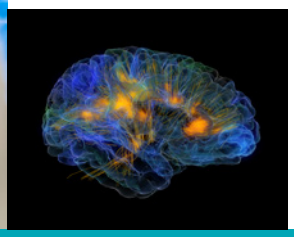
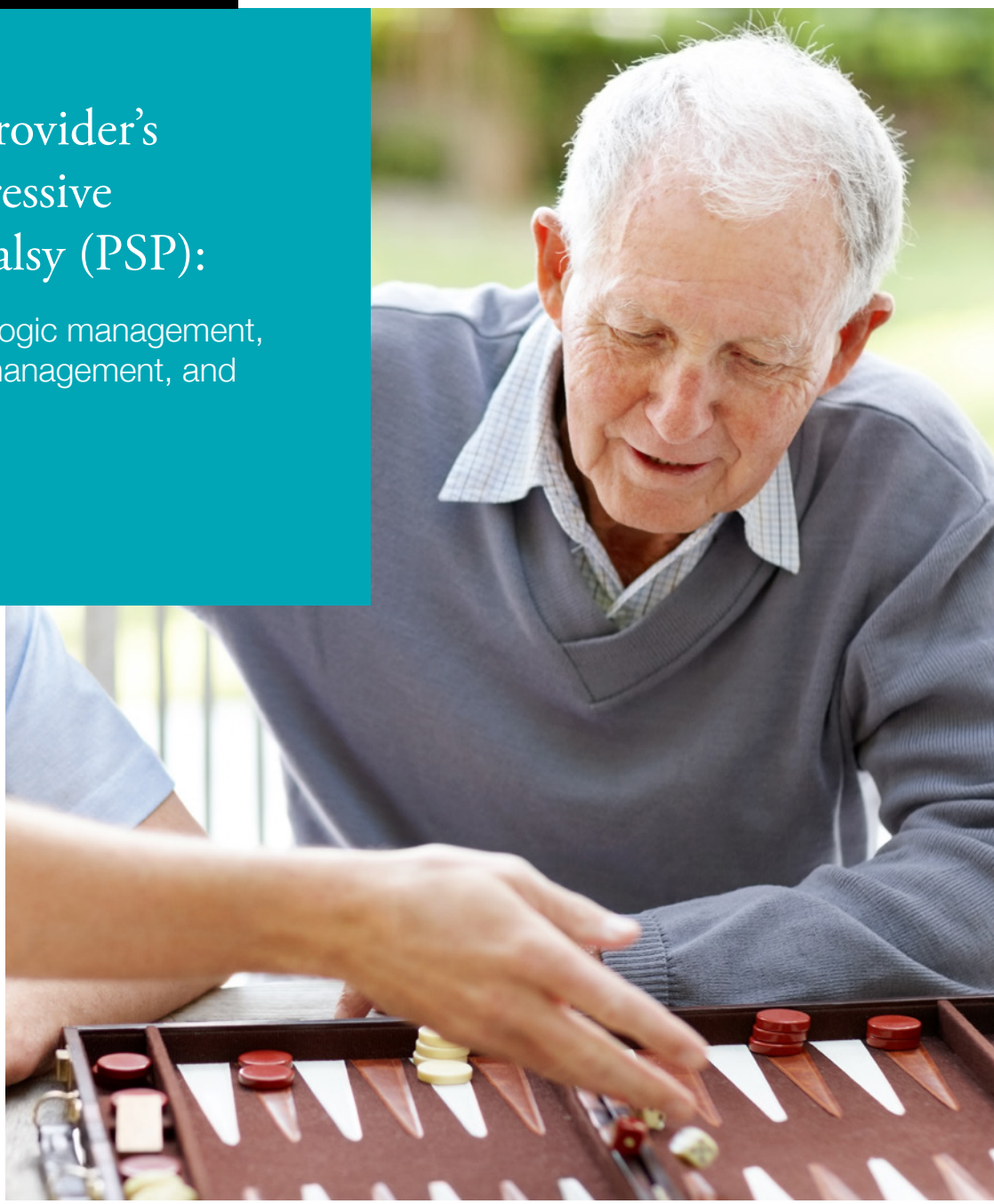


A Healthcare Provider's Guide To Progressive Supranuclear Palsy (PSP):

Diagnosis, pharmacologic management, non-pharmacologic management, and other considerations



This material is provided by UCSF Weill Institute for Neurosciences as an educational resource for health care providers.

UCSF Weill Institute for Neurosciences

Memory and Aging Center

A Healthcare Provider's Guide To Progressive Supranuclear Palsy (PSP):

Diagnosis, pharmacologic management, non-pharmacologic management, and other considerations

Diagnosis

Definition

Progressive supranuclear palsy (PSP) is a degenerative brain disease that can have different clinical manifestations. Most commonly, PSP presents with axial rigidity, vertical gaze palsy, frequent falls, pseudobulbar affect, frontal executive disabilities, and neuropsychiatric disturbances including depression, anxiety, impulsivity, and paranoia. PSP occurs primarily in middle-aged adults and the elderly, affecting slightly more males than females. Approximately 1.39–6.4 in every 100,000 individuals are estimated to have PSP, but because the disorder is difficult to diagnose, this is thought to be considerably underestimated. A significant number of patients present with asymmetric frontal syndromes and can be diagnosed with nonfluent primary progressive aphasia (nfvPPA) or bvFTD.

Etiology

The underlying pathology of PSP is a tauopathy, however its etiology is unknown. Most cases of PSP are sporadic, but some people have a genetic form that follows an autosomal dominant inheritance pattern with reduced penetrance.[1]

Course

Visual and oculomotor problems combined with balance and walking problems are usually the early features of the disease, but the illness can present with cognitive and behavioral changes. The initial motor symptoms observed in PSP include a combination of slowed movement and stiffness in the neck and trunk, in addition to imbalance and falls. The earliest visual signs include slow vertical saccades, difficulty opening and closing the eyes, and decreased blinking. The decreased blinking, along with a constant raised-eyebrows facial expression, may give the face a characteristic fixed stare.

Dysarthria is a common symptom in PSP. Eventually, difficulties with control of oral movements can progress to dysphagia, which can result in aspiration pneumonia, the most common cause of death in PSP.

Late in the course of this disease, the symptoms progress to the point where walking becomes very difficult. Eye movement problems get to be more disabling. Apathy and depression are common, and cognitive impairment may progress to dementia.

Differential Diagnosis

PSP is frequently misdiagnosed as either corticobasal syndrome (CBS) or Parkinson's disease (PD). Sometimes the clinical presentation can look like bvFTD or nfvPPA. Midbrain tumors, Whipple's disease, Gaucher's disease, Niemann-Pick-C, and mitochondrial disorders are unusual but possible causes of similar symptoms. PSP patients do not typically show the tremor of PD patients and tend to have balance problems and vertical gaze abnormalities early in the disease.

Diagnostic Criteria

Clinical research criteria for PSP published by Dr. Irene Litvan and others:[1]

I. Inclusion criteria

A. **Possible:** Gradually progressive disorder
B. Onset at age 40 or later
C. Either vertical (upward or downward gaze) supranuclear palsy OR both slowing of vertical saccades and prominent postural instability with falls in the first year of disease onset
D. No evidence of other diseases that could explain the foregoing features, as indicated by mandatory exclusion criteria
E. **Probable:** Vertical (upward or downward gaze) supranuclear palsy and prominent postural instability with falls in the first year of disease onset
F. **Definite:** Clinically probable or possible PSP and histopathologic evidence of typical PSP

II. Exclusion criteria

A. **Possible:** Gradually progressive disorder
B. Onset at age 40 or later
C. Either vertical (upward or downward gaze) supranuclear palsy OR both slowing of vertical saccades and prominent postural instability with falls in the first year of disease onset
D. No evidence of other diseases that could explain the foregoing features, as indicated by mandatory exclusion criteria
E. **Probable:** Vertical (upward or downward gaze) supranuclear palsy and prominent postural instability with falls in the first year of disease onset
F. **Definite:** Clinically probable or possible PSP and histopathologic evidence of typical PSP

III. Supportive criteria

A. Symmetric akinesia or rigidity, proximal more than distal
B. Abnormal neck posture, especially retrocollis
C. Poor or absent response of parkinsonism to levodopa therapy
D. Early dysphagia and dysarthria
E. Early onset of cognitive impairment including at least two of the following: apathy, impairment in abstract thought, decreased verbal fluency, utilization or imitation behavior, or frontal release signs

Pharmacologic Management

Medications to Use

Currently, there are no effective treatments for PSP. It is helpful to review with the patient the expected and realistic goals. If the patient has vascular disease or mixed dementia, they should receive management and education regarding modification of cardiovascular risk factors.

Medications typically used for Parkinson's disease may alleviate some symptoms. Sinemet (carbidopa-levodopa) may help with motor rigidity or eyelid apraxia, though evidence is conflicting. Depression may be treated with SSRIs if present

Medications to Avoid

Medications with strong anticholinergic side effects, such as sedating antihistamines, barbiturates, narcotics, benzodiazepines, gastrointestinal and urinary antispasmodics, CNS stimulants, muscle relaxants, and tricyclic antidepressants should be avoided. Antipsychotics should be used with caution. If used, carefully evaluate effectiveness of medication and consider discontinuing if there is no improvement in six weeks.[2,3,4]

Non Pharmacologic Management

Physical therapy and exercise can help preserve and maximize motor function, as well as help with sleep issues. An occupational therapist can help reduce falling hazards. A speech pathologist may be helpful in evaluating and managing dysphagia.

Healthy Lifestyle

There are lifestyle habits that promote health and well-being. Research suggests that the combination of good nutrition, physical activity, and mental and social engagement may provide benefit in promoting health although more study is needed to determine the actual mechanisms.[5,6] A heart-healthy diet (lower in sugar and fat and higher in vegetables and fruit) is considered to be good for both the body and the brain. An example is the Mediterranean diet that promotes nutrition based on fruit, vegetables, nuts, and grains with limits on consumption of red meat and saturated fats. Physical exercise has been associated with improvement of mood and mobility, and a decrease in the risk for falls.[7,8] Physical activities that are socially engaging (walking or swimming with a friend and participating in exercise groups) can be especially enjoyable. Engagement in activities that are mentally stimulating (crossword puzzles, sudoku, computer games) is encouraged as long as the activity is enjoyable.

The Alzheimer's Association has more information on tips for maintaining your health: alz.org/we_can_help_brain_health_maintain_your_brain.asp

Sleep

Patients with PSP may have significant sleep pattern disruptions because the disease affects some neural circuitries that are involved in sleep processing. They may suffer from insomnia, including difficulties with falling and staying asleep. There are no good medications to alleviate the insomnia but medications such as melatonin, trazodone and benzodiazepine can be tried. A referral to a sleep center, preferably to neurologists who specialize in sleep conditions, may be fruitful.

Disrupted sleep can negatively impact memory and thinking, though the mechanisms are not well understood.[9]

Components of sleep hygiene include:

- Avoid napping during the day
- Avoid stimulants such as caffeine, nicotine, and alcohol too close to bedtime
- Get regular exercise
- Avoid eating right before sleep
- Ensure adequate exposure to natural light
- Establish a regular relaxing bedtime routine
- Associate your bed with sleep. It's not a good idea to use your bed to watch TV, listen to the radio, or read

For more details on sleep hygiene, you can refer to the National Sleep Foundation at sleepfoundation.org/ask-the-expert/sleep-hygiene.

Other Considerations

Support Resources

- Alzheimer's Association: alz.org
- Family Caregiver Alliance: caregiver.org
- National Institute of Health/National Institute on Aging: nia.nih.gov/alzheimers
- The Association for Frontotemporal Degeneration: theaftd.org
- NINDS Progressive Supranuclear Palsy Information Page: ninds.nih.gov/Disorders/All-Disorders/Frontotemporal-Dementia-Information-Page
- CurePSP: psp.org

Research and Clinical Trials

The National Institutes of Health maintains an extensive listing of clinical trials at clinicaltrials.gov. Academic medical centers may be engaged in research and clinical trials.

Safety

Loss of balance leading to falls is a common early symptom of PSP and can be compounded by the vertical gaze palsy. PSP patients often do not have much insight into their risk of falling, making it particularly dangerous. If the patient is impulsive and not likely to wait for help in getting up, constant supervision may be necessary. Good lighting and removing throw rugs and clutter from living areas can help reduce tripping hazards. Ensure that shoes and clothes fit well and don't add to the risk of falling. Grab bars and hand railings may also help, especially in bathrooms. An occupational therapist can help with a home safety evaluation. A physical therapist can train the caregiver in assisted falls, how to help without getting hurt, and getting help if the person with PSP has already fallen and can't get up.

Patients with PSP don't typically wander. However, if wandering or getting lost is a concern, refer the patient and family to the MedicAlert +Alzheimer's Association Safe Return program (operated by the Alzheimer's Association) alz.org/care/dementia-medic-alert-safe-return.asp. Other strategies for ensuring safety concerns may include door alarms and increased supervision.

Driving

Depending on cognitive and motor findings, the patient may be requested to stop driving, complete test of driving abilities through the Department of Motor Vehicles (DMV), or be referred to a driver's safety course that will assess driving ability. Reporting to the DMV should be consistent with state laws. Some states have mandatory reporting requirements: the diagnosis is reported to local health departments who then report to the DMV. Individual state requirements can be found at: dmvusa.com.

Living Situation and Environment

It is important to determine if the patient's residential setting best meets his or her functional and cognitive abilities. Areas of concern may include personal safety (ability to manage medications safely, ability to manage nutritional requirements, ability to manage personal hygiene) and quality of life (activities and engagement that match the person's needs and abilities).

Types of living situations range from living at home alone or living at home with supervision, to board and care, assisted living, or memory care units.

Elder Abuse

Patients with dementia and their caregivers are vulnerable to abuse. Refer to Adult Protective Services (APS) if there is concern for the well-being of the patient or the caregiver.

To locate an APS office in your state, see: napsa-now.org/get-help/help-in-your-area/.

Legal Planning

Provide information about advance directives and durable power of attorney while the patient is in the early stages of disease and able to articulate his or her wishes. Make referrals for legal and financial advice, especially if there are concerns about the patient's judgment, decision-making, or vulnerability. A formal evaluation for capacity may be warranted. The Alzheimer's Association provides a brochure that covers legal planning: alz.org/national/documents/brochure_legalplans.pdf.

- **Advanced Directives**
  These documents allow individuals to state their preferences for medical treatments and to select an agent or person to make health care decisions in the event they are unable to do so or if they want someone else to make decisions for them.
- **Power Of Attorney**
  A Power of Attorney (POA) is a legal document that gives someone of an individual's choosing the power to act in their place. POAs can be for medical or financial matters.
- **Living Will**
  A living will is a written, legal document that spells out medical treatments that an individual would and would not want to be used to keep them alive, as well as other decisions such as pain management or organ donation.

Teaching Video for Providers

An example of a physician telling a patient she has dementia: alz.org/health-care-professionals/dementia-diagnosis-diagnostic-tests.asp#alzheimers_diagnosis.

References

1. Litvan I, Agid Y, Calne D, et al. Clinical research criteria for the diagnosis of progressive supranuclear palsy (Steele-Richardson-Olszewski syndrome): Report of the NINDS-SPSP International Workshop. *Neurology.* 1996;47(1):1-9. 2. Han L, Mccusker J, Cole M, Abrahamowicz M, Primeau F, Élie M. Use of Medications With Anticholinergic Effect Predicts Clinical Severity of Delirium Symptoms in Older Medical Inpatients. *Archives of Internal Medicine.* 2001;161(8):1099. 3. Roe CM, Anderson MJ, Spivack B. Use of Anticholinergic Medications by Older Adults with Dementia. *Journal of the American Geriatrics Society.* 2002;50(5):836-842. 4. Babbott S, Kalender-Rich J. Faculty of 1000 evaluation for American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. *F1000 - Post-publication peer review of the biomedical literature.* 2012. 5. Barnes DE, Santos-Modesitt W, Poelke G, et al. The Mental Activity and eXercise (MAX) Trial. *JAMA Internal Medicine.* 2013;173(9):797. 6. Jedrziewski MK, Ewbank DC, Wang H, Trojanowski JQ. The Impact of Exercise, Cognitive Activities, and Socialization on Cognitive Function. *American Journal of Alzheimer's Disease & Other Dementias®.* 2014;29(4):372-378. 7. Howe TE, Rochester L, Neil F, Skelton DA, Ballinger C. Exercise for improving balance in older people. *Cochrane Database of Systematic Reviews.* September 2011. 8. Podewils LJ. Physical Activity, APOE Genotype, and Dementia Risk: Findings from the Cardiovascular Health Cognition Study. *American Journal of Epidemiology.* 2005;161(7):639-651. 9. Yaffe K, Falvey CM, Hoang T. Connections between sleep and cognition in older adults. *The Lancet Neurology.* 2014;13(10):1017-1028.