CASE STUDY

# A Case Study in Alzheimer's Disease

A 69-year-old woman presents with symptoms of forgetfulness that worsen over time. Now the doctor must decide when a diagnosis of Alzheimer's disease should be made, how the family should be told and what support can be offered to the caregiver.

*by Serge Gauthier, MD, FRCPC*

## History

***Mrs. J. is a 69-year-old Caucasian woman who presents with symptoms of forgetfulness.*** She has trouble remembering names and the location of certain keys on her typewriter. Her past medical history includes uncomplicated shingles and treatment with prednisone for temporal arteritis between the ages of 65 to 67, with residual osteoporosis. Consequently, she has been taking calcium supplements as well as low doses of thyroid replacement therapy.

***Twenty months later, Mrs. J. is reassessed and she reports that her memory impairment has worsened and is now "embarrassing" her. She has stopped working in an office and her husband has observed her to be more irritable as well as nervous.***

Her family history includes a maternal uncle with dementia who is in his 90s. A standard laboratory blood work-up is negative except for mild normocytic anemia. The neurologic exam reveals mild limb apraxia. Her Mini-Mental Status Exam (MMSE) score is 27/30 (considered normal) and her clock drawing is perfect (Figure 1). The initial diagnostic impression is that of uncertainty as to the benignity of the cognitive (predominantly recent memory) loss.

***Twenty months later,*** Mrs. J. is reassessed and she reports that her memory impairment has worsened and is now "embarrassing" her. She has stopped working in an office and her husband has observed her to be more irritable as well as nervous. The neurologic exam shows that the patient now has buccolingual and limb apraxia. Her clock drawing is now impaired in that she has put in at least 15 numerals and has no idea how to place the hands of the clock. A diagnosis of early Alzheimer's disease (AD) is made.

***One year later,*** Mrs. J. is assessed by an AD specialist. Her symptoms now encompass some word-finding difficulties and the need for supervision to look after her financial affairs and for cooking. Her affect is described as sad, with a tendency to sleep more in the daytime. A psychogeriatric consultation rules out depression. Her MMSE is 24/30 and her clock drawing is impaired. The diagnosis of AD is confirmed and felt to be of stage 4 on the seven stages Global Deterioration Scale (GDS) (Table 1).

***A year after that,*** Mrs. J. is forgetting to give phone messages, can still dial familiar phone numbers, and has shown temporary spatial disorientation in her condo in Florida and when visiting her brother's house. She has stopped cooking altogether, is afraid of the oven and needs some supervision for the selection of her clothes. She is still able to stay alone for several hours at a time, allowing her husband some time at his golf club. Nevertheless, she shows anxiety for upcoming events. The MMSE is now 20/30. Her GDS stage is 5. Her husband and children have heard about new AD drugs and hope that some drug intervention might stabilize Mrs. J.'s symptoms. A follow-up visit is scheduled.

## *AD Case Questions and Related Commentary*

### Questions

- **Are there early markers of AD?**
- **In this case, how would you follow up on your suspicion of AD?**
- **When should a diagnosis of AD be attempted?**

### Comment

In screening for dementia, the primary care physician has a number of practical tests available to assist in differentiating between cognitive changes associated with normal aging, and cognitive loss indicative of early-stage dementia. The MMSE is a well-known cognitive screening tool, but is subject to some degree of educational bias. Serial administration of the MMSE is useful in plotting cognitive loss over time. In addition, the clock drawing test is sensitive to early dementia and, like the MMSE, offers an opportunity for documenting cognitive changes over the course of dementia.

***Serial administration of the MMSE is useful in plotting cognitive loss over time. In addition, the clock drawing test is sensitive to early dementia and, like the MMSE, offers an opportunity for documenting cognitive changes over the course of dementia.***

These serial cognitive assessments, in addition to functional assessments, are integral to the physician's ongoing clinical record-keeping that is necessary for treatment, patient management at home and institutionalization at the more advanced stages of dementia. The physician should be careful in mentioning suspicion of AD at this stage or at the first visit, given the uncertainty of the diagnosis of dementia and the risk of reactive depression. Other concomitant medical disorders that could cause or contribute to cognitive decline should be ruled out.

Despite advances in our knowledge of the etiology of AD, even now there are no diagnostic tests of sufficient sensitivity and specificity to make a firm diagnosis of AD at this very early stage. There are evolving protocols for serial brain imaging using MRI, PET and SPECT, as well as neuropsychological batteries studying delayed recall and word fluency. Equally promising is a recent report of EEG changes during sleep, which may lead to an early diagnostic marker.

Table 1

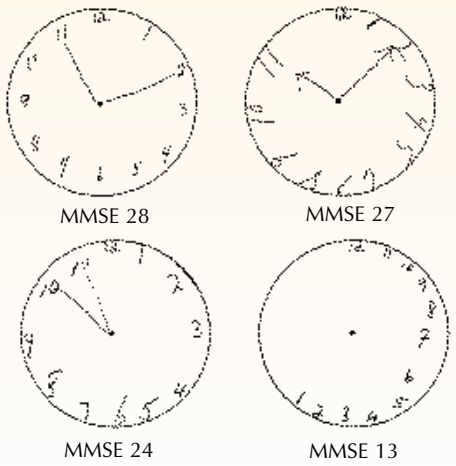
Global Deterioration Scale

| Stage | Clinical characteristics |
|---|---|
| 1 | — |
| 2 | Subjective forgetfulness, but normal examination |
| 3 | Difficulty at work, in speech, when traveling in unfamiliar areas, detectable by family; subtle memory deficit on examination |
| 4 | Decreased ability to travel, count, remember current events |
| 5 | Needs assistance in choosing clothes; disorientation to time or place, decreased recall of names of grandchildren |
| 6 | Needs supervision for eating and toileting, may be incontinent; disoriented to time, place and possibly to person |
| 7 | Severe speech loss; incontinence and motor stiffness |

Reisberg B, Ferris SH, DeLeon MJ, et al: The global deterioration scale for assessment of primary degenerative dementia. Am J Psychiatry 1982; 139:1136-9.

Figure 1

Illustrations of Clock Drawings From Four Alzheimer Patients at Different Disease Stages




Gauthier S, Burns A, Pettit W: *Alzheimer's Disease in Primary Care*. Martin Dunitz, London, 1997, p.15.

## Questions

- **How is the diagnosis of AD made?**
- **How do you tell the family that the patient has AD?**
- **How do you follow the progression?**

## Comment

The DSM-IV criteria for dementia are:

- Memory impairment; one of aphasia, apraxia, agnosia and/or disturbance of executive functioning
- Impairment in occupational or social functioning
- Decline from previous level of functioning

In order for a diagnosis of dementia to be made, the cognitive impairment of the patient must have a functional impact that is clearly evident. In the natural history of dementia the loss of functional independence signals a disease milestone.

Two instruments for gauging functional status, the Functional Activities Questionnaire (FAQ) and the Physical Self-Maintenance Scale (PSMS), facilitate assessment and signal disease milestones which require more intensive formal care. At this early stage, the higher executive functions are more likely to be affected. Family caregivers should be referred to the local chapter of the Alzheimer Society for ongoing family education, information on local resources and primary caregiver support. Medico-legal issues are now of concern to the physician and include the safety of the patient in the home environment, driving ability and advanced directives for the late stages of AD.

## Question

- **When do you suspect a mood disorder?**

## Comment

Depression must be carefully ruled out in early AD and may require a specialist referral if there is uncertainty as to the diagnosis. Depression may mask early dementia so that depressed patients with cognitive impairment should be followed over time and further cognitive impairment should be documented once depressive symptoms are resolved. When antidepressants are indicated, they should be selected on the basis of safety, tolerability and their drug interaction profile.

The staging of AD requires a good understanding of the multiple symptomatic domains in dementia. Depression and anxiety-related symptoms in early AD tend to decrease in severity as insight becomes progressively more limited. There is a progressive loss of higher cognitive functions and functional independence (usually beginning with the instrumental activities of daily living), followed by the emergence of neuropsychiatric symptoms, which eventually abate as Parkinson-like motor changes suppress all behavior.

***In order for a diagnosis of dementia to be made, the cognitive impairment of the patient must have a functional impact that is clearly evident.***

While variations in the progression of AD and in the rate of its progression are not uncommon, the staging of the disease through instruments such as the GDS offers a clinical timeline for the progression of dementia. It is at stages 3, 4 and 5 that most of the drugs for AD have been tested in clinical trials.

## Question

- **What kind of support can be offered to the caregiver?**

## Comment

The load on the caregiver increases progressively with the loss of functional autonomy. The anxiety of being left alone could have limited the husband's availability of free time and impaired his psychological health. As a preventive measure, respite or day care can be arranged by the physician. Sensitivity to the health needs and well-being of the primary caregiver is a key component of the primary care management of AD, and knowledge of community-based formal supports is necessary for appropriate referral. Planning for institutionalization is critical in the later stages of the disease and is facilitated by physician and family contacts with local social services.

*This case study is part of an Alzheimer's Case Study Continuing Medical Education (CME) series sponsored by Pfizer Canada. For more information regarding the program in your area, please call your local Pfizer representative.*