Archives of Sexual Behavior, Vol. 19, No. 4, 1990

The Incidence and Correlates of Erectile Problems in Patients with Alzheimer's Disease

Antonette M. Zeiss, Ph.D[1,3] Helen D. Davies, M.S., R.N.C.S.,[1] Mary Wood, B.S.[1] and Jared R. Tinklenberg, M.D.[1,2]

Loss of erection was reported in 53% of 55 male Alzheimer's disease patients with a mean age of 70.25. Loss of erection is not related to degree of cognitive impairment, age, or depression. Modal time of onset of erectile problems is concurrent with onset of Alzheimer's symptoms. Patients with erectile problems were not taking more medications overall than those without problems and had no greater overall incidence of concurrent physical problems. Thus, the evidence suggests that there may be an elevated incidence of erectile failure in patients with Alzheimer's disease as a primary problem not attributable to other age-related factors.

KEY WORDS: sexual dysfunction; dementia; Alzheimer's disease.

INTRODUCTION

Despite the dramatic burgeoning of research and clinical programs related to Alzheimer's disease, little attention has been paid to the impact of the disease on sexual functioning. In the only published article to date, Teri and Reifler (1986) provided a thoughtful clinical overview of sexual issues but no empirical data. They pointed out that sexual problems and concerns about sexuality may be extremely important for patients and care-givers. For example, concerns about sexuality are frequently raised spontaneously in sup-

[1]Veteran's Administration Medical Center (182B), 3801 Miranda Avenue, Palo Alto, California 94304.
[2]Department of Psychiatry and Behavioral Sciences, Stanford University Medical Center, Stanford, California 94305.
[3]To whom correspondence should be addressed.

0004-0002/90/0800-0325$06.00/0

port groups for spouses of patients with Alzheimer's disease. For example, some partners feel distressed about sexual overtures from a spouse who no longer knows their name or at times does not recognize who they are. Others are bothered by frequent sexual overtures (sometimes many each night) from partners who do not remember the episode of sexual intercourse that occurred earlier in the evening. Another concern is inappropriate sexual behavior, such as the patient who exposes himself or masturbates in public.

Despite these concerns, many couples would like to maintain sexual contact. This allows them to retain some aspects of their marital closeness, despite the tragic losses caused by Alzheimer's disease. In such couples, a very commonly noted concern is loss of sexual contact, usually triggered by loss of the husband's erectile capacity.

This research project was designed to examine the incidence of erectile problems in men with Alzheimer's disease. In addition, factors related to erectile dysfunction are examined, including such factors as time of onset in relation to the diagnosis of Alzheimer's disease, age, medical problems, concurrent use of medications, and concurrent depression. One goal of the research is to determine whether the incidence of erectile dysfunction in men with Alzhiemer's disease is higher than that reported for similar-aged samples in men who do not have Alzheimer's. A second goal is to identify factors that distinguish those men with Alzheimer's who develop erectile dysfunction from those who do not.

METHOD

Subjects

Subjects consisted of 55 male patients with a mean age of 70.25 years who fulfilled NINCDS criteria for probable Alzheimer's disease (McKhann *et al.*, 1984) and DSM-IIIR (APA, 1987) criteria for Primary Degenerative Dementia of the Alzheimer's type. Subjects were selected from a population of patients volunteering to participate in a longitudinal study on Alzheimer's disease at the Gero-Psychiatric Rehabilitation Unit at the Palo Alto Veterans Administration Medical Center, Palo Alto, CA. This sample was almost entirely Caucasian (98%), but not all are veterans as the project was open to the full range of community members (87% veterans, 13% nonveterans). Patients in this study were followed at 6-month intervals from early onset. At each contact, mental status exams were given and patients and spouses were interviewed. Of the subjects, 53 were married and 2 were widowed. In addition they had a Hachinski (Hachinski *et al.*, 1974) score of less than 4 and no evidence of other cause of dementia, i.e., cerebral vascular symptoms or signs; hypertension greater than 150/95; alcoholism; drug abuse; head

trauma; epilepsy; mental retardation; localizing signs on EEG, CT, or neurological exam; abnormal chest X-ray; abnormal laboratory exams; or indication of significant psychiatric disturbance.

Procedures

Each patient was interviewed and evaluated by a research psychiatrist and a clinical nurse specialist. During the initial visit, demographic information, clinical, social, and family history were gathered from the patient and, in most cases, the care-giver. Input from the care-giver was gathered separately. Cognitive assessment was completed by the same health professional. Mental status was assessed by the Folstein Mini-Mental Status Examination (MMS; Folstein *et al.,* 1975); the Hamilton Depression Rating Scale (Hamilton, 1960) was used to measure depression; and the Global Deterioration Scale (GDS; Reisberg *et al.,* 1982) was utilized to determine the stage of Alzheimer's disease.

Patients and care-giver/companions (typically, a spouse) were asked in the clinical overview about sexual difficulties. Questions about erectile functioning were specifically asked, along with questions about any inappropriate or disturbing sexual behavior. If difficulty with erections was reported, the year of onset of clear problems was elicited (i.e., the date when problems with erection began occurring consistently, not just on an occasional basis). In most instances, consistent information was provided by both patient and spouse. If there was an inconsistency, the report of the nondemented spouse was used. We defined patients as having erectile dysfunction if the patient and/or the nondemented spouse reported that the patient did not have erections sufficient for intromission and sexual intercourse. In the multiaxial diagnostic system (Schover *et al.,* 1982), patients would qualify for a diagnosis of difficulty maintaining erections or difficulty achieving and maintaining erections.

From an original sample of 80 cognitively impaired patients, 23 were excluded because they did not meet NINCDS criteria for a diagnosis of probable Alzheimer's disease. Another 2 cases were eliminated because the history of erectile failure was unclear, leaving a total sample of 55. In 6 information had not been obtained in the interview, but was obtained by sending a written request to the home for information on sexual functioning.

RESULTS

Among these patients, 53% reported erectile dysfunction. Although difficult to pin down, this incidence of dysfunction seems likely to be higher

Table I. Age of Patients With and Without Erectile Problems

Age	No. of patients with erectile failure	No. of patients without erectile failure	% Erectile failure in this age range
50–59	2	1	67
60–69	11	14	44
70–79	11	9	55
80+	5	2	71

than expected in age-related samples based on normative research on sexual difficulties. For example, Starr and Weiner (1981) reported that 7% of a sample of men aged 60–69 no longer report erection and sexual activity. Kahn and Fisher (1969) reported that only 19%, of a sample with a mean age of 75, did not have erections sufficient to remain sexually active; 40% of a sample with a mean age of 82 did not have erections sufficient to remain sexually active. Tsitouras *et al.* (1982) reported 31% erectile failure in a sample with a mean age of 68. Both these studies use a criterion of erectile failure very similar to ours, i.e., the man reports recurring or complete loss of erection which precludes sexual intercourse. Table I shows that our sample appeared to exceed these in rate of erectile failure at all age ranges. In our sample, a t test showed no significant difference in age between patients who had erectile dysfunction (mean age = 71.93) and those who did not (mean age = 68.35); $t(53) = 1.75$.

The modal time for onset of erectile dysfunction in these patients was concurrent with the diagnosis of Alzheimer's and/or the emergence of the first clear disease symptoms with a normal distribution around that mode. A t test revealed that the difference between the reported mean times of onset of the Alzheimer's and the erectile failure was not significantly different from zero, $t(49) = 0.10$, ns.

Additional t tests were conducted testing the hypothesis that patients with erectile dysfunction would be more cognitively impaired than those with

Table II. Comparison of Patients With and Without Erectile Problems: Means and t-Score Differences

	Patients with erectile failure (n = 29)		Patients without erectile failure (n = 26)		
	$\bar{X}$	SD	$\bar{X}$	SD	t
Hamilton Depression Inventory	7.13	5.83	6.73	6.80	0.21
Reisberg GDS	4.81	1.17	4.43	0.97	1.31
Folstein MMS	13.71	8.16	16.39	5.98	1.29
No. of medications	1.55	1.33	1.19	1.20	1.03
No. of medical problems	1.52	1.27	1.29	1.25	0.71

no problem in erection. As shown in Table II, the two groups were not si ficantly different on either GDS or Folstein MMS scores. Further, there no difference between groups on level of depression, as measured by Hamilton Depression Rating Scale. Finally, t tests were used to exan whether the group with erectile failure might have other medical probl that would provide an alternative explanation for that sexual problem. T revealed no significant differences between groups on total number of m cal problems or medications (see Table III). Chi-square tests revealed differences in these sequences across groups, with one exception: Pati with erectile problems were more likely to report benign prostatic hypertro or transurethral resection of the prostate, $\chi^2(4) = 4.30, p < 0.05$. Howe these prostatic problems are not typically considered causal of erectile fai in and of themselves (e.g., Libman *et al.*, 1987).

DISCUSSION

The results support the hypothesis that erectile failure is a high freque problem in men with Alzheimer's disease. The incidence of erectile probl found in this sample is higher than that reported in studies of similarly a nondemented males. Although comparing across samples is not definit this sample is quite healthy, with the important exception of the diagn of Alzheimer's disease. None of these patients have many of the other he

Table III. Medical Problems, Medications, and Erectile Failure in Patients With Alzhe mer's Disease[a]

	% Patients with erectile failure (n = 29)	% Patients without erectile failure (n = 26)	χ^2
Medical problems			
Arthritis/gout	7	15	< 1
Cardiovascular problems (mild)	0	12	1.6
Dizziness	10	12	< 1
History of alcoholism	7	15	< 1
Prostate problems	34	8	4.3
Testicular problems	10	4	< 1
Medications			
Antianxiety agents	10	8	2.8
Antiarthritis/gout	0	15	< 1
Antidepressives	14	4	< 1
Antihypertensives	10	19	< 1
Antipsychotics	3	11	< 1
Cardiovascular medications	10	4	< 1
Metabolic enhancers	38	12	1.41
Sleep medications	14	4	1.34

[a]Percentages are not additive, since some patients have more than one medical proble and/or are on more than one medication.
[b]$p < 0.05$.

problems that are likely causes of erectile failure in aging men: endocrine disorders, cancer, significant cardiovascular problems, current alcohol abuse, etc. Therefore, one would expect the incidence of erectile failure to be lower than the 53% figure obtained, unless Alzheimer's disease itself constitutes a significant risk factor. Future research should include a matched control group of similarly healthy elderly men who do not have Alzheimer's to provide a conclusive demonstration of this.

The present findings are limited by the fact that only self-report and partner-report data are available. While these reports were only used if reliable (i.e., reported or confirmed by the nondemented partner), they do not give a precise estimate of the degree of loss of erection. Patients were included in the "erectile failure" group if erection sufficient for intercourse no longer occurred. Some of these patients might still have some degree of erection, either during sexual activity or during REM sleep episodes. Future research could usefully expand measurement strategies to provide a more detailed description of the degree and pattern of erectile difficulties in this population.

The frequent reports of emergence of erectile failure during the early onset of Alzheimer's disease is an intriguing finding, particularly since the degree of risk was not associated with degree of cognitive impairment. Nor was age or depression associated with risk for erectile problems, so again it appears that it is the Alzheimer's disease itself, and not some other correlated factor, that constitutes the risk. Perhaps in cases where there is not a clear alternative explanation, Alzheimer's disease might be considered in evaluating older males who present with a complaint of erectile failure. However, these data are limited in that they are retrospective. The emergence of Alzheimer's may be a "marker" around which memories are clustered when there is some uncertainty as to their exact time of onset. Future research might follow a group of patients from early onset to get a more precise assessment of the time of onset of problems with erection, as well as other sexual complaints.

If future research replicates and extends the current findings, the next question will be how Alzheimer's disease might affect erectile functioning. There could be a direct effect, with the CNS deterioration of the disease disrupting the necessary pathways mediating arousal and/or erection. Alternatively, there could be indirect and psychological effects. A man with early Alzheimer's disease may feel that he is no longer a true husband or appropriate sexual partner. This view may be shared by the wife. Or the couple may focus their attention on making other more salient adaptations to the disease (such as dealing with its impact on the extended family, their own financial resources, etc.). The stress of these adaptations may preclude having the emotional energy to continue an active sexual relationship. Preliminary work with a small sample suggests that psychological factors are important in at least

some cases, as the first author has seen some Alzheimer's patients with erectile failure and their partners in sex therapy with good results. Further efforts are planned to examine the impact of such interventions.

REFERENCES

American Psychiatric Association (1987) *Diagnostic and Statistical Manual III R*, APA Washington, D.C.

Folstein, M. F., Folstein, S., and McHugh, P. R. (1975). Mini-Mental State: A practical method for grading the cognitive state of patients for the clinician. *J. Psychiat. Res.* 12: 189-198.

Hachinski, V., Lassen, N., and Marshall, J. (1974). Multi-infarct dementia: A cause of mental deterioration in the elderly. *Lancet* 2: 207-210.

Hamilton, M. (1960). A rating scale for depression. *J. Neurol. Neurosurg. Psychiat.* 23: 56-62.

Kahn, E., and Fisher, C. (1969). REM sleep and sexuality in the aged. *J. Geriat. Psychiat.* 2: 181-199.

Libman, E., Fichten, C. S., Amsel, R., Creti, L., Weinstein, N., and Brender, W. (1987). Differential consequences of prostatectomy on sexual functioning in younger and older males. Paper presented at 21st Annual AABT Convention, Boston, MA.

Martin, C. E. (1981). Factors affecting sexual functioning in 60–79 year old married males. *Arch. Sex. Behav.* 10: 399-404.

McKhann, G., Drachman, D., Folstein, M., Katzman, R., Price, and Stadlan, E. M. (1984). Clinical diagnosis of Alzheimer's disease. *Neurology*, 34: 939-944.

Reisberg, B., Ferris, S. H., deLeon, M. J., and Crook, T. (1982). The Global Deterioration Scale for assessment of primary degenerative dementia. *Am. Psychiatr.* 139: 1136-1139.

Schover, L. R., Friedman, J. M., Weiler, S. J., Heiman, J. R., and LoPiccolo, J. (1982). Multiaxial problem-oriented system for sexual dysfunctions. *Arch. Gen. Psychiat.* 39: 614-619.

Starr, D. D., and Weiner, M. B. (1981). *The Starr-Weiner report on sex and sexuality in the mature years,* McGraw-Hill, New York.

Teri, L., and Reifler, B. V. (1986). Sexual issues of patients with Alzheimer's disease. *Med. Aspects Hum. Sex.* 20: 86-91.

Tsitouras, P. D., Martin, C. E., and Harman, S. M. (1982). Relationship of serum testosterone to sexual activity in healthy elderly men. *J. Gerontol.* 37: 288-293.