ORIGINAL ARTICLE

Behavior disturbances are common among dementia patients. Management of behavioral problems begins with the assessment of psychiatric, medical, and environmental etiologies. Treatment plans based upon behavioral or pharmacologic interventions can substantially reduce problematic behaviors.

Behavior Problems in Demented Nursing Home Residents: A Multifaceted Approach to Assessment and Management

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INTRODUCTION

Alzheimer disease and other dementias take a large toll on afflicted patients, their families,[1] and the people who care for them.[2] With disease progression, behavioral or affective disturbances become increasingly common, affecting as many as 80% of patients.[3] Assessing and managing these behavior changes is a growing challenge for clinicians, particularly as the population ages, placing greater numbers of patients at risk for developing dementia.

Assessing behavior changes in a dementia patient can, at times, be a daunting task. Often, the dementia is complicated by co-morbid medical conditions, which may be treated with multiple medications. These illnesses and the drugs used to treat them may themselves cause or exacerbate behavior changes. Psychiatric syndromes frequently occur in the context of dementias and may complicate or cloud the presenting behavior problems. The patient's living environment and the actions of the people who care for dementia patients may be the culprit in causing behavior changes. In addition, underlying all of these facets is the dementia itself, which often robs the patient of the ability to adequately understand or communicate the nature of their distress, leaving the clinician with little accurate historical information to rely upon in assessing the patient. Is it any wonder that clinicians sometimes turn to trial and error approaches to pharmacologically manage difficult behaviors in dementia patients?

The purpose of this paper is to outline an approach to the effective management of behavior disturbances in dementia patients. As with any symptoms, the first step in treatment is a thorough evaluation of the patient and the environment. This assessment entails an exploration of environmental,

REPRINTS

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medical, and psychiatric etiologies of behavior changes, which will then guide appropriate medical, pharmacologic, or behavioral interventions.

EVALUATING THE BEHAVIOR

Problematic behaviors among the demented population can be quite variable in terms of severity and the amount of distress they cause the patient or others in their living environment. So too, some behaviors such as wandering, may be problematic in one particular environment such as the family home, but may pose little difficulty on a closed dementia unit. Thus, it is important to focus not just upon the behavior itself, but also upon the behavior in the context of the environment in which it occurs.

Often caregivers may use such general terms as "agitation," or "paranoia" to describe patient behavior to the treating physician. The physician may then initiate a plan of care based upon his/her own interpretation of that description. Rather than rely upon such imprecise descriptions of behavior, it is imperative that clinicians thoroughly assess the patient in order to better understand the nature of the behavior that is causing problems.

Assessment is ideally performed in the patient's own living environment with input from caregivers and family who know the patient well. Obtaining detailed accounts of the behavior, including onset, severity, exacerbating or ameliorating factors, time of day, and how caregivers have attempted to manage the behavior, will often provide important clues as to how to approach problematic behavior. Observing or attempting to elicit some behaviors will often improve the assessment as well.

It is important to bear in mind that behavior can be a form of communication. As dementias progress, patients' abilities to understand and communicate wants and needs through language becomes diminished. As an example, a cognitively-intact patient with arthritis will utilize language to express discomfort; "nurse, my back hurts whenever you put me into that wheelchair." A dementia patient with arthritis may scream and strike out at a caregiver in order to communicate that she is in pain. In this example, the "treatment" for such "aggression" would not be an injection of haloperidol, but should focus on pain management and educating staff on proper transfer techniques for patients with degenerative joint disease. Being thorough in one's investigation of unwanted behaviors may yield a better outcome for patient and caregiver alike. It sometimes takes creativity to interpret a demented patient's behavior, but without such attempts, the efforts to intervene will likely be fruitless.

MEDICAL EVALUATION

Most dementia patients are in the geriatric age range and are likely to suffer from co-morbid medical conditions, which in turn may cause of influence problematic behaviors. Approximately one-third of dementia patients will develop psychiatric symptoms which are secondary to medical processes,[4] thus, underscoring the need for thorough medical evaluation whenever behavior changes occur in dementia patients.

Agitation and other behavior problems in dementia patients may be caused or exacerbated by many common medical conditions (Table 1), with cardiovascular, infectious, and metabolic abnormalities being among the most common. The medical evalu-

TABLE 1

Common Medical/Neurologic Conditions Contributing to Behavioral Disturbance in Demented Nursing Home Residents (from Reference 5)

Cardiovascular
- Myocardial infarction
- Congestive heart failure

Endocrine
- Diabetes mellitus
- Hypo or hyperthyroidism
- Malnutrition with electrolyte imbalances

Infections
- Urinary tract
- Pulmonary

Cancer
- Pancreatic
- Lung
- Breast
- Colon

Neurologic
- Stroke
- Subdural hematoma
- Brain injury

Sleep
- Obstructive sleep apnea
- Restless legs syndrome

Pain
- Arthritis

ation is essential whenever problematic behaviors are present, and particularly when behavior changes occur acutely or sub-acutely.

The history must often be elicited from caregivers, family members, and the available medical record. Examination should include a mental status examination and physical examination with emphasis on neurologic and cardiopulmonary facets.

Laboratory testing should be limited, and is guided by the history and findings on physical examination. Electrolytes, serum glucose, thyroid studies, calcium, and phosphorus levels will screen for endocrine or metabolic etiologies of behavior changes. If cardiac or pulmonary causes are suspected, electrocardiogram and chest radiograph may be useful tests. Common infectious processes may need to be evaluated through chest radiographs, urinalysis, and complete blood count. If focal neurologic signs are present or frequent falls have occurred, neuro-imaging with computerized tomography is indicated to rule out cerebrovascular accident or subdural hematoma.

Special attention should be taken in review of the patient's medications. Dementia patients may be more sensitive to the central nervous system effects of many drugs, and elderly patients experience decreased metabolism, excretion, and protein binding of many agents, thereby increasing the risk of accumulation and toxicity. Drugs that require periodic blood level monitoring such as digoxin, lithium, or anticonvulsants should be reviewed. If the addition of new medications or dosing adjustments have occurred close to the onset of behavior changes, they may have played a role in causing the behavior. Whenever possible, opioids, long-acting benzodiazepines, barbiturates, and anticholinergic agents should be reduced or eliminated because worsening cognition in the demented may play a role in behavioral disturbances.

PSYCHIATRIC ASSESSMENT

Psychiatric symptoms are common among dementia patients, affecting up to three-quarters of Alzheimer patients.[5] Psychiatric manifestations of Lewy body, Pick, and vascular dementias are also quite common.[6-8] Depression, anxiety, and psychotic syndromes may all contribute to difficult behaviors. Because dementia patients often cannot understand or verbalize their inner emotional states, behavioral symptoms may be the primary expression of a psychiatric disorder.

Whenever medical or environmental etiologies of behavior changes have been ruled out, or when affective, anxiety, or psychotic symptoms predominate, psychiatric illnesses should be high on the differential diagnosis. Depressive syndromes may be marked by sleep changes, weight loss, tearfulness, nihilistic or negativistic thought expression, or mournful or inconsolable calling out behaviors.

Anxiety disorders are common in the geriatric population and may contribute to agitated behaviors. Restless pacing, excessive worry, or preoccupation with a desire to leave the facility; "I just want to go home," may all be the presenting symptoms of a primary anxiety disorder.

Delusions and other psychotic symptoms such as hallucinations are common in Alzheimer disease and may be contributing factors in aggression towards others. It is important to thoroughly investigate these symptoms, however, and not accept reports of them at face value. Often, the term "paranoia" is inaccurately applied to describe certain behaviors. As an example, if a patient, as a function of his dementia, describes his wallet as having been stolen because he cannot find it, he has misperceived reality, and is unlikely to be suffering from a psychotic disorder. The clinical solution would not be to add a neuroleptic medication, but to provide the patient and staff with environmental modifications, which might help him to better account for his possessions. This would be different from a situation where a patient may describe vivid visual experiences of people rummaging through his closet, which may indeed warrant a pharmacologic approach.

PHARMACOTHERAPY

Pharmacologic approaches to behavior disturbances should be based upon diagnosis and with consideration of the patient's medical history, psychiatric history, and current medications. Whenever possible, selection of an agent should target the diagnosis. If the patient has a history of a depressive disorder, or if depression symptoms predominate, it would be reasonable to initiate an antidepressant. If psychotic symptoms predominate, neuroleptics would be reasonable to consider.

Often a specific diagnosis cannot be established, however, making selection of a particular drug more problematic. Several studies and case reports exist in the literature, detailing the efficacy and tolerability of many pharmacologic medications in reducing unwanted behaviors.[9] While many drugs show promise for use in decreasing disturbed behaviors, it is important to recognize that for most medications, there are few controlled studies available in the literature demonstrating efficacy.[10]

Elderly and demented patients are at increased risk of experiencing side effects from any medica-

tions, and, thus, psychotropic medications should be carefully titrated to the lowest effective dose, with caregivers being fully apprised of potential side effects to monitor. Table 2 presents a list of medications, which are commonly used to help reduce behavioral disturbances in patients with dementia.

Anticonvulsants. Several studies have shown the effectiveness of anticonvulsants in reducing problematic behaviors in dementia patients. Carbamazepine (Tegretol®, Novartis Pharmaceuticals, East Hanover, NJ) and valproic acid (Depakote®, Abbott Laboratories, North Chicago, IL) have been the most widely studied. In controlled studies carbamazepine serum levels of 5.3 µg/mL substantially reduced aggression and agitation and was reasonably well-tolerated by most participants.[11,12] Carbamazepine can elevate liver enzymes and can induce the metabolism of other pharmacologic agents, thus increasing the possibility of drug-drug interactions. Additionally, carbamazepine can decrease white blood cells and more rarely can cause aplastic anemias or agranulocytosis.

Valproic acid has also been shown to reduce behavioral disturbances, and while controlled studies are lacking, several open-label studies point to its effectiveness.[13-15] One author recommends initiating the dose at 125 mg/day and increasing the dose by 125 mg every three to six days until symptoms improve or a blood level of 40–100 µg/mL is achieved.[16] Valproic acid can cause increased liver enzymes and hepatotoxicity, thus warranting monitoring of liver function tests.

While not as widely-studied, newer drugs such as gabapentin (Neurontin®, Parke-Davis Pharma-

TABLE 2

Commonly Used Agents for Reducing Behavioral Disturbance in Dementia Patients (Modified from Reference 5)

Agent	Initial Dose	Common Side Effects
Neuroleptics		
Haloperidol (Haldol)	0.25–0.5 mg b.i.d.	Sedation Extrapyramidal symptoms Akethisia
Olanzapine (Zyprexa)	5 mg q.h.s.	Sedation Weight gain
Risperidone (Risperdal)	0.25–0.5 mg b.i.d.	Sedation
Quetiapine (Seroquel)	12.5–25 mg b.i.d.	Sedation
Anti-Convulsants		
Carbamazepine (Tegretol)	50–100 mg b.i.d.	Sedation Gastrointestinal distress Altered drug metabolism
Valproic Acid (Depakote)	125–250 mg q.h.s.	Sedation Gastrointestinal distress Altered drug metabolism
Anxiolytics		
Lorazepam (Ativan)	0.25–0.5 mg b.i.d.	Sedation Disinhibition Delerium
Anti-Depressants		
Trazodone (Desyrel)	12.5–25 mg b.i.d.	Sedation Orthostasis ECG changes

ceuticals, Morris Plains, NJ) and lamotrigine (Lamictal®, Glaxo SmithKline, Research Triangle Park, NJ) have also shown promise in the reduction of problematic behavior.[17-19]

Neuroleptics. Previously, neuroleptics were the mainstays for the reduction of problematic behaviors, but because of extrapyramidal symptoms (EPS), the risk of tardive dyskinesia (TD), and cardiovascular effects, newer atypical neuroleptics have been more widely used. Low-dose risperidone (Risperdal®, Jannsen Pharmaceutica, Titusville, NJ) has been shown to effectively reduce aggression in dementia patients with Parkinson disease without worsening cognition or causing EPS.[20] Higher doses of risperidone have been associated with the development of EPS, however.

Olanzapine (Zyprexa®, Eli Lilly & Co, Indianapolis, IN) in doses of 5–10 mg has been shown to be effective in reducing agitation, and this agent is also reasonably well-tolerated with somnolence being a common side effect.[21] Quetiapine (Seroquel®, AstraZeneca Pharmaceuticals, Wilmington, DE) has also been utilized to reduce psychosis and aggression in the elderly demented population.[22]

Atypical neuroleptics, as a class, are less likely than traditional neuroleptics to cause TD and EPS, and have shown promise as being effective agents in the reduction of problematic behavior.

Other Drugs. Benzodiazepines have been used extensively in agitated dementia patients, and a limited number of studies have demonstrated their efficacy.[23-25] Because of slowed biotransformation and decreased elimination in elderly patients, lower doses of shorter-acting drugs such as oxazepam and and lorazepam are preferred. Lorazepam has the added advantage of not being transformed by the cytochrome P-450 system, thus making it safer for patients with hepatic dysfunction. When benzodiazepines are utilized, patients need to be monitored for sedation, stability of gait, and for the development of tolerance to the medication.

The antidepressants trazodone[26] and citalopram (Celexa®, Forrest Pharmaceuticals, St. Louis, MO)[27] have also been utilized to reduce aggressive behavior in dementia patients, as have cholinesterase inhibitors,[28] and hormonal therapy.[29] When behavioral symptoms persist despite other interventions, electroconvulsive therapy has been shown to be safe and effective.[30,31]

NONPHARMACOLOGIC INTERVENTIONS

Nonpharmacologic interventions offer several advantages in reducing unwanted behaviors in dementia patients. The most obvious of these advantages is that there are no pharmacologic side effects or drug-drug interactions. If environmental factors are causing the behavior, the root of the problem may be addressed or eliminated without the initiation of medications.

Cohen-Mansfield[32] has written the definitive literature review on nonpharmacologic approaches to inappropriate behaviors. In this review, she presents a conceptual model of understanding inappropriate behaviors in dementia patients, divided into three areas; unmet needs, learning/behavioral models, and environmental vulnerability/reduced stress-threshold model.

Unmet Needs. Sensory deprivation, boredom, and loneliness may contribute to behavior difficulties. Interventions such as hearing aids, physical activity, or increased social interaction may address the underlying causes of behavior changes, and thus improve function and quality of life for the patient.

Learning/Behavioral Models. Problematic behaviors may be reinforced by caregivers, thus increasing the chances the behavior will occur. Strategies aimed at modifying staff interactions with patients may decrease unwanted behaviors.

Environmental Vulnerability/Reduced Stress-Threshold Model. This model postulates that dementia patients have a lower threshold of reacting to environmental stress, and as a function of their dementia, lose their capacity to effectively respond to stresses. Relaxation techniques such as massage, increasing appropriate touch, and reducing stresses or excessive stimulation in the environment, may reduce unwanted or problematic behaviors.

Carlson, et al.[33] have developed a practical approach to evaluating several different common problematic behaviors among dementia patients, and provide caregivers with many common potential causes or antecedents of each of these behaviors, as well as practical management strategies for intervening and improving these behaviors nonpharmacologically.

SUMMARY

Patients with dementia present a wide array of challenging behaviors. Effective management of these behaviors begins with appropriate evaluation of medical, psychiatric, and behavioral factors which each may be playing a role in causing or exacerbating target behaviors. Effective plans of intervention may need to target one or all of these areas.

When clinicians are unfamiliar with biological, psychosocial, and environmental approaches, or when they do not have the time to develop an integrated care plan, the goal of reducing unwanted

behaviors is unlikely to be achieved. With integration of these approaches, difficult behaviors can be reduced, and the quality of life for dementia patients and the people who care for them can be improved. **CT**

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