

Management of the Demented Patient

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There are four essential points to the rational management of the demented patient which will be dealt with here. They are 1) the definition of the term dementia, facilitating the identification of a specific group of patients, 2) the sequence of diagnostic steps required to identify manageable and treatable features in demented patients, 3) the effective separation of dementia from depression, which is probably the most significant diagnostic point for primary care physicians, and 4) the description of a few clinical features encountered in demented patients which the physician can often modify by family education and training, by the manipulation of the patient's environment, and by medication needed to maintain the patient's general health.

Dementia is defined as a sustained decline in intellectual, behavioral, and cognitive function from a previously attained level, whatever the cause, and does not necessarily indicate an irreversible or untreatable state. Most demented patients retain large areas of neurological function and many may remain at home for the major part of their illness. As a symptom complex, dementia is a very important health problem and some estimates indicate that nearly one quarter of hospital patients in the United States are so afflicted. In the year 2025, an estimated 40% of the population of the United States will be over 65 with a comparable increase in the number of individuals defined as demented.

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Dementia should be differentiated from confusion, which is usually thought of as impaired ability to adapt to rapidly changing environmental stimuli, owing to a disorder of attentive mechanisms, but with little disturbance of intellect. Although demented patients may sometimes become confused, confusion per se may exist in the absence of dementia. The combined states may result in an apparent though reversible intensification of the preexisting dementia which is often called "decompensation." This may rapidly reverse itself as the cause of the superimposed confusion disappears.

When the ambulatory demented patient is brought to the primary care physician, the family is more apt to complain of the patient's behavior than his or her intellectual performance or capability. Few patients suffering dementia consult physicians on their own and many are unaware of their deficiencies. Ordinarily there are three conditions which may exist alone or in combination which disturb the families, causing them to consult the physician: 1) Progressive weight loss, most often in the individual who is trying to live alone, which usually means that he or she is not eating enough, 2) Mood disorder, often characterized by volatility which may express in a distorted way elements of the patient's prior personality, and 3) Abnormal neurological states such as defective memory, inability to dress, difficulty in maintaining personal cleanliness, and a disorder of gait which may be interpreted as Parkinsonism. Often these states appear to have been precipitated by fever, dehydration, or the inappropriate use of psychoactive drugs.

Other neurological behavioral abnormalities which the patient may exhibit include disturbance of learning, diminution of cognitive ability regarding his

or her surroundings, spatial disorientation owing to loss of capacity to discriminate the form, shape, and dimension of objects seen in context, perceptual dysfunction relating to the abstract meaning of events, words, or things, and impaired calculation, usually manifested early by simple arithmetical errors. There may also be a subtle degradation in the patient's use of language from a former expressiveness to a progressively elementary and repetitive mode. Usually, language tends to disintegrate as the patient's condition worsens, and he or she may have difficulty remembering individual words, formulating intelligible complex sentences, and repeating ideas and words. Disorientation of time and space occurs early, with time being by far the most easily disrupted sense and thus the one more obviously disturbed.

Emotional control often becomes impaired early and is usually manifested by inappropriate expression of feelings; such individuals become increasingly unable to regulate their anger or rage or to interpret expressions of love and affection. Thus many of the older men who have fondled their granddaughters' breasts or exposed themselves to their nieces are in fact demented persons, who having been kissed as an act of filial devotion, have misinterpreted both meaning and intent. At the same time, ineffectively regulated defense reactions result in their excessive expression due in part once again to the patient's misinterpretation of the situation and his corresponding intolerance of frustration. This is frequently seen in the writings of a mildly demented and often elderly patient who has written over his errors, or crumpled, torn, or scratched through the page when simple erasure would have been adequate.

Difficulty in walking is among the most common motor manifestations which occur in demented patients. Many of these individuals suffer hip injuries from an inability to break a fall backwards when rising from a chair or the toilet. These gait disorders are characterized by walking on a narrow base, marked instability on starting or stopping, and the tendency to fall backwards upon rising from a sitting position. These disorders result in part from a marked tendency of the foot and toes to flex plantarward and inward on contact with a flat surface, followed by stiffening of the leg. Disturbances of tone can usually be seen upon passive manipulation of the patient's limbs, especially the legs, so that resistance to manipulation is felt and seems equal in force, and opposite in direction, to the movement which the examiner is attempting to impose. This may be fol-

lowed by the patient's adopting the rhythm of the examiner's movement and resisting further change in its amplitude or rate. Heedless urinary incontinence often accompanies these gait disorders. Clumsiness (or apraxia), even for tasks as apparently simple as opening a can, dialing a telephone, or using a pair of scissors, may occur in these patients.

Compulsive acts such as touching, licking, or tasting objects, and a variety of automatic movements such as tapping, patting, grasping, or avoiding are common. Less often, patients develop a distal wrist and finger tremor at rest or on action, but this usually differs from Parkinsonian tremor which is maximal at rest; some tremors, however, very closely resemble those of Parkinsonism. Oculomotor manifestations, basically a disturbance of horizontal eye movements, alter facial expression as fixation becomes tonically maintained at the expense of gaze. The resulting staring expression is often followed by loss of ability to dissociate head from eye movements.

As indicated above, demented patients invariably develop some type of language disturbance. Since it evolves slowly and is rarely global in ambulatory patients, it may escape recognition. Two basic tendencies are common: one is relative mutism, the other is a disorder of syntax in which incorrect sentences are formed, accompanied by degrees of difficulty in choosing the correct word. In addition to, and often concomitant with, the disorder of language, there may be automatisms of chewing, sucking, or lip smacking which are provoked by perioral skin contact or movements in the visual periphery. These resemble the rooting and sucking responses which are seen normally in the nursing infant. While these are customary and adaptive in the first year of life, they should never be seen after weaning except in the presence of brain disorders usually involving the frontal or temporal lobes. Their appearance in the adult is invariably an indication of severe disintegration of forebrain function.

The facial expression becomes altered in nearly all demented individuals. This reflects in part the abnormalities of ocular movement mentioned above, accompanied by postures which maintain dystonically released fragments of sucking and rooting. Beyond that, however, two variations in facial expression are commonly encountered. The first is the bewildered appearance of the patient who fails to comprehend. The facial expression, while mobile, does not reflect the circumstance which evoked it and is thus recognized as abnormal. The other is perhaps

more common and is characterized by immobility of the face and eyes. Usually, marked tonic fixation of gaze accompanies ocular immobility, and change in fixation requires movement of the head. The palpebral fissures are widened due in part to persistent contraction of the frontalis muscles, resulting in a furrowed forehead. At the same time, overaction of the levator anguli oris deepens the nasolabial fold, while the mouth usually remains tonically agape. This attitude is characteristic of lesions about the lateral frontal regions or the white matter carrying motor fibers from them. Such facial dystonia is common in multi-infarct dementia which occurs in hyper-tension and following arterial border zone infarcts resulting from ischemic anoxia.

The grasp reflex, like the sucking response, is an automatism evoked by skin contact. Since they both bring the body part into closer contact with the stimulus, they are regarded as "positive" automatisms. In elicitation of the grasp reflex, the tendons must not be stretched, otherwise an entirely different kind of response will result. Usually, when the examiner's fingers are drawn lightly across the patient's palm the patient will grasp the fingers within a few moments. If the examiner then tries to pull his fingers away, the patient's grasp becomes even tighter in a response known as the trap reaction. Further, if the examiner moves his own hand after grasping has occurred, the patient's hand follows this movement as though attracted irresistibly; the so-called magnet reaction. Perioral and upper limb automatisms are very important features of the physical examination of the demented patient. Like abnormalities of gait, they help predict degrees of functional loss of skilled movements (limb-kinetic apraxia) which are common in such patients.

Demented individuals invariably lose reading and writing skills in a hierarchical fashion. The patient who has lost the ability to read sentences can often read words. When no longer capable of reading words, he or she can usually form letters. Alternatively, the patient who has lost the capacity to perform skilled movements usually becomes unable to form letters or numbers. Such individuals may write repetitiously, often tracing and retracing their own figures in whole or in part. When asked to copy simple geometric designs, the patient renders drawings that are often distorted in terms of space and form. Errors in spatial configuration usually correlate with impaired visual perception; those of form correlate with altered language function.

As the patient's dementia worsens, there is a tendency to develop a posture which in some ways resembles the flexed attitude of Parkinsonism. All four limbs and the spine become bent, with the head held thrust forward. Sometimes when the patient is lying flat the head will be held off the pillow, especially upon visual stimulation from the end of the bed. This appears to be a positive visual automatism as the posture is stimulus bound. It is an abnormal event and rarely seen except in the presence of severe forebrain disease. The degree to which such postures of flexion are present appears to reflect the severity of the underlying disease process. The ultimate manifestation of postural disintegration is an attitude of dystonic flexion at the pelvis and knees, often with severe adduction of the hips. Later similar attitudes affect the upper limbs and neck as the patient lapses into the terminal posture of his illness. As the flexed postures just described are assumed, there is invariably some disturbance of walking known as gait apraxia. In other cases patients stand with their limbs and spine overextended, tending to topple backwards. The response to foot contact in these individuals is exactly the opposite of the tonic foot response and is marked by extension at the toes and ankle and eversion at the latter. This phenomenon of "foot avoiding" underlies the overextension gait disorder as the tonic foot response underlies gait apraxia.

Just as the tonic foot response accompanies palmar grasping and sucking and belongs to the family of positive automatisms, the negative avoiding reaction of the foot accompanies a similar movement of the hand; this is characterized by dorsal flexion of the wrist and extension and abduction of the fingers upon tactile stimulation, especially along the ulnar margin. Head retraction on visual stimulation is the oculocephalic component of this system of negative automatisms, called thus because the response is one of withdrawal from stimulation.

The major diagnostic problems are to separate cases of dementia, regardless of etiology, from those of depression (Table 1), and to differentiate cases of treatable from untreatable dementia. The physician should be interested in making the first distinction because depression is a condition for which there is particular and effective treatment which often results in the rapid restoration of the patient to his customary pattern of living. The reason for making the second distinction is self-evident.

Many clinical features in addition to those previously examined will help separate depression

TABLE 1
Differentiating Depression from Dementia

	Depression	Dementia
Mood	Altered-Sustained	Volatile-Unstable
Automatisms	None	Copious-Persistent
Perception	Preserved	Impaired
Comprehension	Acute	Dull
Language	Linguistically intact, reflects the mood	Many semantic and syntactic errors
Antidepressant Treatment	Effective	Useless
Neurological Signs	None	Many
CSF	Normal (except in diabetics)	Often abnormal
CT Scan	Normal	Often shows atrophy and large ventricles
EEG	Normal	May be abnormal
Neuropsychological Tests	Confirm mood depression	Loss of function invariably
Extraneurological Disease	Variable	Frequent

from dementia. Mood is one of the most important; the depressed patient's mood is sustained whether he is agitated or depressed. In demented patients mood disturbances occur, but are usually unstable. Over the course of minutes there may be moments of depression, agitation, or euphoria; affect is usually extremely volatile and shifts rapidly from one phase to another. Moreover, the mood shifts are commonly either excessive in degree or inappropriate in nature. These features may be of importance in identifying dementing disorders caused by such chronic meningoencephalitis as general paresis or cryptococcosis in which patients may appear depressed, but the correct diagnosis is suggested by volatility and instability of mood.

The positive and negative automatisms of sucking, grasping, avoiding, tonic foot responses, the gait and posture disturbances, and the disorders of language so characteristic of dementia are totally absent in depressed patients, but most demented individuals exhibit one or more of these abnormalities.

Gross and readily detected disturbances of perception are ordinarily absent in depressed patients, though many older persons may suffer hearing or visual impairment. Depressed patients not only preserve their perception but frequently are acute and sensitive even to the point of being referential and paranoid in response to even the most trivial environmental event. The demented patient is just the oppo-

site. The depressed patient retains perfect comprehension, although it may be distorted against the background of his mood disorder. Alternatively, the demented patient frequently understands only the most material and concrete things and is often unable to detect meaning or relationships.

The language of the depressed person reflects his mood. His word retrieval and syntax are normal. The demented patient makes many errors in sentence organization and often has marked difficulty retrieving correct words, frequently resorting to inadequate substitutes or clumsy phrases. Such awkwardness in phrasing is called periphrasis.

Patients with dementia do not respond to antidepressant treatment and indeed many of them become worse. Patients with depression generally respond well to one or more forms of antidepressant therapy.

A reasonable work-up for a demented patient, following exclusion of depression, is directed toward discovering treatable disease. Its most important single constituent is the spinal fluid examination. The physician should be attentive to such components of the spinal fluid as its appearance, pressure, protein, sugar and cellular constituents, and the results of an immunological test for syphilis. While syphilis remains relatively uncommon, fungus meningoencephalitis occurs with relative frequency and the diagnosis is most readily established by examination of some aspect of the spinal fluid. Budding yeasts may actually be found, but in many cases it is necessary to examine the fluid for cryptococcal antigen. For practical purposes this disease is the sole cause of mycotic meningoencephalitis in the United States except in southern California and southwestern Arizona where coccidioidomycosis is prevalent. Both of these diseases are treatable and hence whenever there are cells in the spinal fluid with mildly reduced sugar and raised protein in combination, these conditions should be considered. Similar changes in the spinal fluid may indicate some other chronic infection such as tuberculosis, but like this condition, neurosyphilis, has become exceedingly uncommon in the United States. Tumor cell meningeal infiltration with altered cerebral function is a more likely cause of dementia. Cytologic examination of the spinal fluid in tumor cell meningeal infiltration frequently, but not always, leads to a correct diagnosis. Measuring such lysosomal enzymes as β -glucuronidase and acid phosphatase may, however, disclose the nature of the process. Since these conditions, though relatively uncommon as causes of de-

mentia, are often largely treatable, the effort is worthwhile.

The electroencephalogram is usually normal in conditions such as Alzheimer's disease and senile dementia, but even so it is a very important part of the evaluation of demented patients as it may provide a clue to focal or lateralized disease. Further, the finding of diffuse slow activity in a patient whose dementia is of less than six months' duration usually indicates some treatable condition such as endocrinopathy. In recording the electroencephalogram it is helpful if the patient is free of sedative and tranquilizing medication, fed within four hours of the test, and kept awake throughout the recording period. Anticonvulsant drugs should be continued in those individuals already receiving them.

Skull x-rays are always made. They often disclose little, but the high value of the occasional finding of a displaced pineal gland, an erosive lesion of the skull, or an unsuspected intracranial calcification makes the procedure worthwhile.

At some point an attempt is made to identify the size and shape of the cerebral ventricles. In the past this has been done by means of pneumoencephalography which permits precise definition of the location of the ventricles and determination of the shape of their roof and the size of the subarachnoid air spaces. Flattening of the roof may indicate a wasting of the corpus callosum and hence loss of cortical nerve cells. This condition is ordinarily associated with enlargement of the cerebral sulci caused by attendant cortical nerve cell atrophy. The significance of these findings is widespread neuronal loss. Conversely, the pneumoencephalogram may show obliteration of the sulci and absence of air in the subarachnoid spaces on the brain surface; the ventricular roof may be saddle-shaped rather than flat. These features may help to identify hydrocephalic dementia secondary to obstruction of spinal fluid absorption, a condition which is often treatable. Although pneumoencephalography with modern radiological equipment discloses the ventricular configuration with precision, the test is cumbersome, costly, and usually causes moderate discomfort. It has lately been superseded by computerized axial tomography, a radiographic technique which, while incapable at present of resolution approaching the precision of air encephalography, is highly accurate, rapidly developing, and has the great advantage of comfort, convenience, and lower risk to the patient.

In the event that the ventriculographic studies

suggest enlargement, particularly with collapse of the subarachnoid space and a saddle-shaped roof, it is very important to determine the direction in which the spinal fluid flows. This may be achieved by an isotope or radionuclide cisternogram which is performed by injecting a labeled substance, such as iodinated serum albumin, into the lumbar subarachnoid space and then recording the progressive flow of the isotope into the head. Normally the flow is over the surface of the brain toward the pacchionian granulations and the draining venous sinuses. In hydrocephalic dementia of the communicating type these surface channels are blocked for a variety of reasons and the spinal fluid is absorbed across the lining of the ventricle. This condition is detectable because the cisternogram will clearly disclose the presence of the indicator substance in the ventricles. While some amount may normally remain for as long as 48 hours, none should be seen at 72 hours. Thus, if nuclide is present in the ventricle at the end of the third day, it is likely that communicating hydrocephalus is present. If the clinical features include headache, torpor, incontinence, gait apraxia, impaired upward gaze, and dementia of less than six months' duration, ventricular shunting should lead to marked improvement.

Psychological tests are also used in assessing patients. The field of neuropsychological research is rapidly expanding and the implications of modern developments in anatomy, physiology, and psychology are being applied to the study of clinical cases. Neuropsychological testing in the demented patient may help approximate the prior level of the patient's intelligence, expose specific perceptual deficits which have been overlooked, help separate personality and behavioral responses, especially depression, and identify areas of preservation of function which may then be of importance in managing specific features of the illness.

No evaluation of a demented patient is complete without attempting to detect extra-neurological disease which may be causal or complicating. Among the most treatable of the causal diseases are drug intoxication with any of a variety of the substances commonly used independently by patients or in medical practice; the most common are bromides, barbiturates, anticholinergic agents, reserpine-containing compounds, and certain anticonvulsants. Their absolute serum drug levels are not necessarily correlated with their behavioral side effects because blood level does not always parallel the intracellular concentration of the substance, and older or de-

bilitated patients may become intoxicated at lower doses and serum concentrations.

Endocrinopathies, metabolic disorders, chronic hypoxia, or respiratory acidosis are among the medical illnesses which may manifest in part by a sustained decline in intellectual function. Ordinarily, correction of the causal illness is associated with improvement or recovery.

Relief of complicating factors such as malnutrition, dehydration, loss of sight or hearing, and congestive heart failure may also improve the behavior of the demented patient.

In the differentiation of dementia from depression, psychological testing, psychiatric interviewing, and various items of case study listed above often aid in resolving the problem. Occasional patients, however, have received (or administered to themselves) large amounts of medication and it may only be after a period of hospitalization without the use of drugs that the separation can clearly be made. Despite these measures there may still be a situation in which dementia cannot be distinguished from depression; this may indicate the limitations of our capacity to differentiate, but in fact some demented patients remain aware of their intellectual losses and react to them with depression. At present, many neurologists escape the dilemma by choosing antidepressant treatment empirically which may result in marked improvement.

Once the cause has been defined the management of the demented patient should lead either to a cure (as in the case of myxedema) or the arrest of the progress of the disease (as in the case of meningeal tuberculosis), thus permitting adaptation both by the patient and his family. Table 2 lists the treatable causes of dementia, but a few comments about them are worth noting. Neurosyphilis, while far less common than 35 or 40 years ago, still accounts for some treatable dementias. The diagnostic criteria of increased protein, up to 100 lymphocytes per cubic

millimeter, and positive serology in the spinal fluid may require some alteration owing to the recent and current widespread use of drugs like penicillin, chloramphenicol, and erythromycin which are effective antiluetic agents. When administered in the treatment of some other illness, they may attenuate but not eliminate the syphilitic infection and thus alter the disease course. Chronic fungal infection, especially cryptococcosis, may also cause a reversible dementia. In contrast to neurosyphilis, however, both spontaneous remissions and post-treatment relapses are known. Cryptococcal meningitis, moreover, is very likely to occur concurrently with other disorders (tuberculosis, lymphoma, collagen disease) in which there has been disorder of immune mechanisms.

Inflammatory conditions such as sarcoid or cellular meningeal infiltration resulting from neoplastic illnesses may be treatable, especially those resulting from lymphoma. These conditions may be identified cytologically or by measurement of spinal fluid lysosomal enzymes. Often they are associated with low spinal fluid sugar.

Compression of the nervous system by extra-axial tumors or fluid collections may give rise to dementia resulting from collapse of surface circulation over a broad area of brain even though there has been no displacement or herniation. Usually this state obtains in the older patient whose smaller brain permits the presence of relatively large compressing masses without edema or displacement of the underlying organ.

Communicating hydrocephalus with altered patterns of flow of spinal fluid and its absorption into the brain across the ependymal lining of the ventricle, intoxications, and metabolic disorders have been discussed above.

Malnutrition is currently a rare cause of dementia in the United States except in the alcoholic population. An occasional case of pellagra or B₁₂ deficiency with confusional dementia still occurs, but Korsakoff's disease is common in alcoholic patients who are thiamine deficient. In pellagra there is often a characteristic skin lesion and usually a history of alcoholism. In Korsakoff's disease there is ordinarily atactic paraparesis with extensive loss of position and vibration senses and typical hematologic findings including multilobulated polymorphonuclear cells. It is always worthwhile to treat these conditions vigorously as all of them, including Korsakoff's disease, are capable of substantial improvement.

While untreated frequent partial complex sei-

TABLE 2
Treatable Causes of Dementia

Infection	Epilepsy
Inflammation	Endocrinopathy
Compression	Vascular
Obstruction	Hepatopathy
Intoxication	Pulmonary Disease
Metabolic Disorder	Perceptual Impairment
Malnutrition	

zures are rarely encountered as causes of dementia, drug treatment of epileptic disorders may cause significant impairment of visuomotor control, perceptual processes, and cognition. It is not always necessary that the patient develop ataxia, nystagmus, neuropathy, or other signs of intoxication to be demented, and blood levels may be "normal" according to published standards. This is more likely to occur in patients whose epilepsy is secondary to or associated with widespread brain disease and who are receiving barbiturates, carbamazepine, or succinic acid derivatives.

Among the endocrinopathies likely to cause dementia, thyroid deficiency or myxedema is by far the most common, especially in patients who have previously undergone thyroidectomy and are on replacement therapy which for some reason has been abandoned and forgotten. These persons will often have an old faded necklace scar which along with other features of myxedema may then be the clue both to diagnosis and cure. Failure of myxedema-related dementia to resolve with replacement therapy should raise the question of an alternative or additional diagnosis. Other endocrinopathies including both hypo- and hyperparathyroidism with abnormalities of calcium and phosphorus, and hypo- and hyperadrenal states with abnormalities of mineral metabolism, may display profound but reversible dementia.

Vascular factors in dementia sometimes offer possibilities of relief. Obviously there is an opportunity for prevention by the early detection and sustained treatment of hypertension. However, in the face of established vascular disease, especially stenosis or occlusion of one or more of the extracranial cerebral vessels (carotid, vertebral), excessively vigorous treatment of hypertension may result in lowering the intracranial perfusion pressure below that needed for effective neuronal metabolism.

The important point here would seem to be that a major cause of dementia in the present era is the cerebral deficit which results from the accumulation of many small infarcts, no one of which is adequate to give rise to a clear local sign but which together produce a marked loss of intellectual function. This is a challenge to the contemporary physician and represents one area where the immediate application of knowledge (normalizing blood pressure in the early asymptomatic phase of hypertension) and effective modification of patient attitudes (compliance with treatment) offer the greatest hope for the future.

Chronic hepatic insufficiency may cause a men-

TABLE 3
Specific Problems in Dementia for Which Management is Possible

Decompensation
Apraxia
Gait
Limb-Kinetic
Language
Perception
Memory
Appetite
Seizures
Orientation
Emotional Control
Anxiety
Agitation
Sense Organ Deficit
General Medical Disease

tal disorder associated with choreoathetosis of the face and limbs. This condition is often manageable by restricting the amount of dietary nitrogen.

That chronic pulmonary disorders, especially hypercarbia, may cause dementia is relatively well known. It need only be pointed out that the pulmonary disease is usually gross and has been present for a long time prior to the development of neurological symptoms. In hypercarbia, furthermore, there are usually headache, raised intracranial pressure, respiratory acidosis, plethora, and bradypnea. Papilledema, while unusual, is not unknown.

Perceptual impairments resulting from hearing or visual loss may result in behavioral alterations in the elderly which resemble some features of dementia, but usually the patient calls attention to his losses, and otologic or ophthalmologic treatment may be restorative.

A variety of reversible brain disorders may produce dementia which will resolve over the course of time. Among these are head injury, hypoxia, sustained hypoglycemia, demyelination, and subarachnoid hemorrhages. Head injuries and subarachnoid hemorrhages may, however, cause communicating hydrocephalus with dementia.

Even in those instances in which the cause for the dementia is untreatable, there are frequently manageable elements (Table 3). Among the most important of these is behavioral decompensation (Table 4). This term refers to an abrupt reversible change in the behavior of the patient usually resulting from fever, dehydration, infection, intoxication, or perceptual impairment. Moreover, decompensation need not be

TABLE 4
Reversible Behavioral Decompensation in Dementia

Delirium, Disorientation, Hallucinations, Stupor, Mutism
Following:
Drugs
Toxins
Infections
Dehydration
Metabolic Disorders
Perceptual Isolation
Psychological Demands
Trauma
Compression of Brain
Hypoxia
Stress of Adaptation

a sustained phenomenon. Thus, the mildly demented, presbycusis or visually impaired older person may waken during the night unable to find the light switch, uncertain as to its location, and unable to understand why the sun is not shining. He may wander about or out of the house as he seeks orientation. The simple act of leaving a night light in his room or a radio playing softly may help avert such predicaments.

Gait apraxia has already been defined. It is one of the more difficult aspects of dementia to manage. By causing falls it is responsible for fractures, subdural hematomas, and painful injuries. Such injuries can usually be averted by equipping the patient's living quarters with handrails, bars in the bathroom and near the commode, by the removal of scatter rugs, and by refraining from waxing floors. If a walking frame is prescribed, it should be reversed so that the patient will not walk into it and tumble. Of equal importance in the management of such patients is the education of the family or nursing personnel as to the meaning of the gait disorder and the techniques for guiding the patient's walking, climbing stairs, or entering or leaving vehicles.

Limb-kinetic apraxia is an important deficit, as those who suffer from it become incompetent in the use of tools and implements. Thus, shaving, using a toothbrush, opening a can, and handling table utensils may be difficult or impossible. An electric razor or toothbrush may sometimes be substituted, but the patient often requires supervision. Food must often be cut so that it can be picked up easily on a spoon, or finger foods such as sandwiches substituted.

Semantic aphasic features may emerge with disordered language function, especially sentence formation and choosing words. Related words such as

father, son, brother, husband, nephew, uncle as male relatives, may be used interchangeably. This is no more amenable to speech therapy than aphasia of any other cause. Management efforts should be directed toward the family as the nature of the errors and correct context are usually obvious and with correction and encouragement the patient may be able to express the burden of his thoughts.

Disorders of perception of cerebral origin such as loss of the capacity to recognize by sight alone or detect the nature of an object by feeling it, like language losses, are usually not accessible to therapy, but the family can often be taught to compensate by altering its expectations.

Memory loss may be more apparent or relative than absolute. Essential to the operation of memory are four processes; registration of information, its storage, recall to mind, and reproduction in a form nearly identical to that of the memorandum itself. In most demented patients memory processes become distorted. There may be major problems of initiating retrieval of the item or the sequence in which it is recalled. Rarely is memory totally abolished except when there is a problem of registration. Thus, with a knowledge of the context and some prompting, a sympathetic relative or attendant may enable the patient to use his memory with greater efficiency. Tables of memoranda may also be helpful. Since loss of memory and the frustration associated with it are often clearly recognized by the patient, relief of this point of stress often leads to a greater degree of comfort and hence more stable performance.

The compensation for sense organ defects and attention to treating disturbances of general health, especially pulmonary and cardiac conditions, are important control points which have been discussed above.

Most of the elderly demented and many others suffer some disorder of appetite. It is common for patients to be anorectic, and weight loss of considerable degree may occur. This reflects in part the limb-kinetic apraxia noted above making it difficult to cut food and use utensils, but it also reflects the fact that such persons are less likely to eat well when alone or left with the responsibility for preparing their own meals. Eating prepared food in the company of others often results in reversal of weight loss.

Seizures in demented patients may reflect a basic feature of the underlying disease and hence will respond to anticonvulsant drugs. If these agents are used, it is prudent to regulate them by blood level or a

dose determined by body weight as some, such as carbamazepine, may cause stupor in the elderly in "standard" oral doses and others such as phenytoin may cause ataxia. If the demented patient is elderly, the physician should remember that an important cause of seizures may be hypoxia secondary to altered cerebral perfusion, most often owing to cardiac arrhythmia.

In moderately demented patients who are still ambulatory, orientation for time, place, and space may be improved by the use of a technique called reality orientation popularized by James Folsom at the Tuscaloosa Veterans Administration Hospital. It consists of teaching patients about themselves and their environment, stressing one thing at a time at a

rate concordant with the patient's capacity to learn. Name, place, date, day of week, room number, the location of the dining room and bathroom, the next holiday, and so forth can all be communicated with reinforcement of retention by placing a blackboard or bulletin board with essential information in the patient's room. Improvement in social behavior has been impressive in many patients.

Agitation, anxiety, and emotional volatility are common in dementing disorders, especially those involving the frontal and temporal lobes. The use of small and carefully controlled doses of diazepam and chlorpromazine may produce not only daytime stability but more natural sleep patterns. The emotional volatility is not usually responsive to reassurance.