UNIT 3 COGNITIVE IMPAIRMENT AND DEMENTIA

Structure

3.0 OBJECTIVES

After reading this unit, you should be able to:

- evaluate a case of cognitive impairment and dementia including Alzheimer's disease;
- diagnose and differentiate it from related disorders;
- provide relevant treatment plan; and
- establish linkage with other disciplines, as commorbidity in old age is quite common.

3.1 INTRODUCTION

Dementia is the most common mental disorder due to neurologic disease and affects 1-2% of 60 year olds and becomes increasingly common among over age of 80. The dementing disorders are a group of brain diseases that leads most often gradually to the loss of mental functions including memory and other intellectual and functional abilities. More than 70 different conditions can cause dementia, where victims suffer impairment of memory and other intellectual abilities that leave them confused, disoriented and incapable of communicating normally. They show personality changes, various emotional reactions to their illness and behavioural symptoms such as tendency to wander overtime. They experience increasingly difficult in carrying out simple activities of daily life, may loose bladder and bowel control and ultimately become totally dependent on others to provide for their personal need and safety.

The cognitive dysfunction may be primary as in diseases, injuries or insults that affect the brain directly. It may be secondary as in systemic diseases and disorders that affect the brain one of the multiple organs or system of the body involved.

3.2 PATHOPHYSIOLOGY OF THE BRAIN IN NORMAL AGING AND DEMENTIA

In normal aging, there occurs reduction in the speed of mental processes and difficulty in learning new tasks. Recall is also affected. But such changes do not interfere with the person's personal, social or occupational life, as happens in dementia.

Recent studies suggest that cognitive decline is not a normal consequence of aging. It has been observed on longitudinal study that subjects who eventually develop dementia of Alzheimer's type show quite normal cognitive performance on the test battery over a period of years but then show a sharp downturn in performance. Secondly in cognitive functions, memory is the key to the self, providing us with our sense of who we are, when that has gone, where is the self and the person's personality is totally lost.

The pathophysiology of dementia's is complex and as there are multiple causes, which include the social, biological and psychological factors besides neurochemical and viral factors have been attributed. Basically any brain pathology (which is insidious in nature) can cause dementia. Alzheimer's disease is the commonest cause of dementia. Here two important risks factors have been attributed, first the increasing age and second risk factor is genetic predisposition specially defect in chromosome 14, 19 and 25. Besides other factors have been implicated like aluminium poisoning and viral causes.

3.3 TYPES OF DEMENTIA

Dementia has been classified into 3 groups as per DSM IV classification. These groups are as a) Dementia, associated with primary dementing illness, trauma, infections, intoxication etc., b) amnestic disorder and c) unspecified (Table 3.1).

Table 3.1: Types of Dementia

I. Primary Dementia
Dementia of the Alzheimer's Type, With Early Onset
Dementia of the Alzheimer's Type, With Late Onset
Vascular Dementia
Dementia Due to HIV Disease
Dementia Due to Head Trauma
Dementia Due to Parkinson's Disease
Dementia Due to Huntington's Disease
Dementia Due to Pick's Disease
Dementia Due to Creutzfeldt-Jakob Disease
Dementia Due to the General Medical Conditions
II. Amnestic Disorders
Amnestic Disorder Due to the General Medical Conditions
Substance-Induced Persisting Amnestic Disorder
III. Unspecified Dementia's
Although the spectrum of psychopathological manifestations of dementia described above are broad. However they can be granted into two main categories.
a. Dementia's of Alzheimer's Type
b. Dementia's due to other causes

Check Your Progress 1

1) Define Dementia.

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2) What are types of Dementia?

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3.4 DEMENTIA OF ALZHEIMER'S TYPE

Definition: Alzeimers disease is primary degenerative cerebral disease of unknown etiology, with characteristic neuropathological and neurochemical features. The disease is usually insidious in onset to develop, slowly but steadily over a period of years. This period can be short or considerably long. The onset can be in any age group but the incidence is higher in later life. In cases with early onset of disease there is likelihood of a family history of similar dementia, a more rapid course and prominence of features of parietal or temporal lobe damage, including aphasia or dysprexia. In cases with a late onset, the course tends to be slower and cognitive impairment is more marked.

3.4.1 Epidemiology

It is more common with increasing age. It is very rare in the age group of 40-45, although it can occur, increases in the age group 60-65, and in the age group over 80 it is very common. Some researchers believe that almost 50% of people over 80 will get Alzheimer's disease. Only two risk factors have been discovered, first is increasing age and the second is genetic predisposition. Genetic transmission has been reported 10-30% of cases. Three genetic defects have been identified, one on chromosome 14, 19 and on 21. Many other factors have been implicated such as viral infection, aluminium poisoning, elderly mother at birth of the patient, family history of other genetic defects. None have been found to increase the risk of Alzheimer's disease.

3.4.2 Early Detection and Screening

As the onset of the disease is insidious and slow and progressive, the early detection of the disease is important. Screening has been defined as the presumptive identification of unrecognized disease or defect by the application of tests, examinations or other procedures, which can be applied rapidly.

A screening test sorts out apparently well persons, who probably have a disease from those who probably do not. A screening test is not intended to be diagnostic.

Hence the first step is to administer a simple test, which can measure cognitive impairment by a Mental Status Questionnaire and the short portable Mental Status Questionnaire. The second stage case identification includes, diagnostic procedures, which include a number of standardized psychogeriatric interviews which are based on clinical diagnostic concepts but also make use of scores derived from rating scales.

The lack of detailed diagnostic criteria is specially significant in early case identification, since without a clear definition there can be no reliable case identification.

The third stage of screening include assessment of associated impairments and disabilities. A comprehensive screening and diagnosis cannot be confined to psychiatric diagnosis and treatment alone. For this reason, a multidimensional concept is indicated in assessment as well as in care programme. The techniques of multi level assessment developed in recent years appear to provide the most suitable working tools for screening and diagnosis.

3.4.3 Clinical Picture

Onset is insidious, usually after 65, though sporadic cases can occur earlier. The disease runs a progressive course. The initial symptoms are impairment of memory and subtle personality changes, usually reported by the family members, the patient often being unaware of this symptoms. Mild anxiety and depressive symptoms are frequently present in the early stages.

In Alzheimers disease there is progressively increasing impairment of memory and other intellectual abilities. Although the problems may initially be manifested in such ways as forgetfulness, poor judgement or difficulty making calculations and handling money, the cognitive losses ultimately leave the person confused, disoriented and incapable of

communicating Normally Commonly personality changes are there, which may range from apathy and social withdrawal to quarrelsomeness and agitation and frequently display various emotional reactions to their illness, such as anxiety, depression or suspiciousness, other symptoms, such as disturbed sleep, hallucinations and delusional ideas or tendency to wander aimlessly are also common.

Overtime even customary daily activities are lost. Eventually they may lose elementary physical abilities such as bladder and bowel control and become totally dependent on others to provide for their personal needs and safety.

Urinary and faecal incontinence may occur at later stages. Seizures, coma and death are the final outcome.

Suspiciousness, obsessiveness, irritability and outbursts of anger may also appear in the early stages of illness. These are followed by disturbances in orientation and judgement, and may lead to purposeless wandering. The patient may be found far away from home in a dazed condition. Neurological defects, such as gait disturbances, aphasia, apraxia and agnosia may occur.

The peculiar tragedy of Alzheimer's disease and other related dementia's is that they dissolve the mind and steal the humanity of the victim, leaving a body from which the person has largely been removed. Simultaneously dementia's devastate lives of spouses and other family members, who must endure their deterioration of their loved ones and the loss of the person and relationship that is implied. Caregivers face the agony of seeing their loved ones minds and personalities disappear from bodies that may frequently remain otherwise healthy and shoulder heaving physical, social and emotional burdens over a prolonged period of time. The effects on the afflicted families are personally profound and financially devastating.

Check Your Progress 2

1) Define Alzheimer's disease.

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2) What are the steps in arriving diagnosis of Alzheimer's disease?

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3) What are risk factors in development of Alzheimer's disease?

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4) Enumerate clinical features of Alzheimer's disease.

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3.4.4 Differential Diagnosis

Diagnosis in an established case of dementia is not difficult, but it requires considerable skill to diagnose it in early stages. It can be easily confused with pseudodementia (depression mimicking dementia) in the initial stages, and also needs to be differentiated from normal ageing. Third important differential diagnosis is delirium. Let us see three different diagnosis one by one.

a) **Depressive Pseudodementia**

In it, depression presents like dementia. As already mentioned, depressive features may be present in the initial stages of dementia. Important differentiating features are given in Table 3.2.

Table 3.2: Differentiation between Dementia and pseudodementia

Dementia	Pseudodementia
I. **Onset and Course**	
• Onset can be dated with some precision	• Onset can be dated only within broad limits
• Intellectual deficits antedate depression	• Depressive symptoms antedate cognitive dysfunction
• Slow progression of symptoms	• Rapid progression of symptoms after onset.
II. **Presentation of Symptoms**	
• Patient tries to conceal his deficits.	• Patient complains much cognitive loss, emphasizes his disability and highlights failures.
III. **Past History**	
• No past history of depression may be present	• Past history of depression may be present.
IV. **Appearance and Behaviour**	
• Sloppy, neglected and apathetic; emotional liability present.	• Sad, worried look
V. **Response to Questions**	
• Evasive, angry and may be sarcastic	• Slow, "I don't know" response Present
VI. **Intellectual Performance**	
• Global impairment	• Confined to memory impairment

b) **Delirium**

Delirium is another common ailment in elderly and needs to be differentiated. Delirium is an acute organic mental disorder which can usually be distinguished from dementia by presence of rapid onset, brief duration, fluctuation of cognitive impairment during the course of the day, marked disturbance in sleep-wake cycle, impaired orientation, clouding of consciousness and visual hallucinations. Important differentiating features from dementia are shown in Table 3.3.

Table 3.3: Differentiation between Dementia and Delirium

Dementia	Delirium
I. **Onset**	
Insidious	Acute
II. **Duration**	
<1 month	Usually > 1month
III. **Orientation**	
May be intact	Impaired
IV. **Thinking**	
Impoverished	Disorganised
V. **Attention**	
Intact	Poor
VI. **Awareness and alertness** (Consciousness)	
Intact	Fluctuating
VII. **Perception**	
Hallucination not present	Hallucinations present
VIII. **Sleep-wakefulness Cycle**	
Always disrupted	Usually normal

3.4.5 Treatment Guidelines

There is no specific drug treatment. However treatment guidelines include the following principles:

First step in management is to find out the cause, if any. A complete medical history and thorough physical examination should be carried out. CT scan is helpful in confirming the diagnosis and also in finding the cause in some cases such as space occupying lesions. Other relevant investigations should be done, for example, thyroid function tests, if hypothyroidism is suspected.

If a treatable cause is found, specific treatment is started, e.g., thyroid replacement therapy for hypothyroidism, and neurosurgical treatment for subdural haematoma and normal pressure hydrocephalus.

General treatment consists of good nutritious diet, nursing care, family support and attention to visual and auditory deficits, if any. If any other physical ailments, such as urinary tract problems, cardiac or pulmonary disorders are present, specific treatment should be given. It is essential to counsel the family regarding nature of illness for its effective management. Family has a very important role to play in management of dementia. Considering the breaking of joint families in India and increase in the elderly living alone due to their children moving away, institutions for the elderly such as old age homes, day care centers, etc., are needed especially for the elderly ill, where they can be taken care of.

Family members need the opportunity to receive a clear diagnosis and explanation of the problem and assistance in assessing their changing care need as the disease progresses and the care demand on the family increase. Care begins in the home and in the community. The challenge is in determining when homecare becomes the option of choice or when nursing home care is necessary. Both forms of care are essential and mutually supportive components of long-term care, neither can substitute for the other.

Medical care involves symptomatic management of treating both psychological and physical symptoms and treatment of medical comorbidity when present. Antianxiety and antidepressant drugs if anxiety and depressive symptoms are present. Risperidone or thioridazine are effective in controlling agitation, if present. The use of vitamins like B and E have been found useful in some cases as these vitamins help in neutralizing toxic elements in the body. Tacrine a cholinesterase inhibitor has been found to produce significant improvement in 20 to 25 % of patients with Alzheimers disease. Similarly RIVASTIGMINE can delay the progression of Alzheimer disease.

Balanced diet and proper fluid management is important part of treatment. Treatment of behavioural manifestations of Alzheimer's is helpful. As a part of care, personal hygiene and toilet habits form an integral part of management.

Check Your Progress 3

1) Which of the following is the specific drug for Alzheimer's disease?

   a) Piracetam

   b) Thioridazine

   c) Risperidone

   d) Rivastigmine

   e) Venlafaxine

2) Which of the following is not a feature of dementia?

   a) Impoverished thinking

   b) Insidious onset

   c) Cognitive impairment

   d) Impaired orientation

   e) Anxiety and depressive symptoms

3.5 ORGANIC MENTAL DISORDERS INVOLVING MENTAL FUNCTIONS OTHER THAN COGNITIVE FUNCTIONS

In these disorders, there is disturbance in thinking, perception, emotions or personality, but consciousness and cognitive functions are not affected. In clinical picture, these resemble the corresponding functional psychiatric disorders but there is:

1) Evidence of cerebral disease, damage or dysfunction, or of physical disease, known to be associated with the respective syndrome.

2) A temporal relationship (weeks or few months) between the development of the underlying disease and the onset of mental syndrome.

3) Recovery from the mental disorder occurs following removal or improvement of the underlying presumed cause.

4) Absence of evidence to suggest an alternative cause of the mental syndrome (such as a strong family history or precipitating stress). Various disorders included in this group are:

Organic Hallucinosis

It is characterized by presence of persistent or recurrent hallucinations, usually visual or auditory, occurring in clear consciousness.

Common causes are psychoactive drug abuse (e.g., alcohol, LSD, cannabis products, etc.) and tumors of occipital or temporal region of brain.

Organic Delusional Disorder

It presents as persistent or recurrent delusions, which may be accompanied by hallucinations. Important causes are drugs like amphetamines, cannabis products, alcohol, etc., and lesions of temporal lobe.

Organic Mood Disorder

The clinical picture resembles that of mania or depression. Post infective depression occurring after bacterial or viral infections comes under this category. Drugs, endocrine disorders, brain tumors, encephalitis and meningitis are important causes of organic mood disorder.

Antihypertensives and hormonal contraceptives are common causes of organic depression.

Organic Personality Change or Disorder

It is characterized by a marked change in personality style and traits from previous level of functioning, which may occur following head injury, cerebral tumors or brain insult due to any other cause.

Organic Anxiety Disorder

Organic anxiety disorder is characterized by prominent, recurrent panic attacks or by generalized anxiety attributable to some clearly defined organic factor.

Central nervous stimulants, such as amphetamines, caffeine, cocaine, adrenaline and drugs like atropine can cause this disorder. Hyperthyroidism, hypothyroidism, vitamin B_{12} deficiency and phaeochromocytoma are other important causes.

3.6 DELIRIUM

Delirium is an organic mental disorder of acute onset characterized by concurrent disturbances of consciousness, attention, perception, thinking, memory, psychomotor behavior, emotion and sleep-wake cycle. It is usually a transient condition and has a fluctuating course. Most cases recover within four weeks. Delirium is common condition in medical and surgical inpatients. About 10 percent of all hospital inpatients manifest some degree of delirium. The figure rises to 30 per cent in-patients in surgical and coronary intensive care units, specially in elderly patients.

Aetiology

Delirium is due to generalized disturbance of brain metabolism. There are a large number of causes. Important causes include encephalitis, meningitis, systemic infections (e.g., typhoid, pneumonia, malaria, etc.), head injury, drugs (e.g., sedatives, anticholinergics, steroids, opiates, etc.), withdrawal from alcohol or other psychoactive substances, endocrinal disturbances, metabolic disturbances (e.g., hypoxia, hypercapnia, renal or hepatic dysfunction, fluid and electrolyte disturbances), and epilepsy.

Clinical Picture

Delirium can occur at any age but is more common in old age. Risk to develop delirium is high in the elderly (age above 60), and in persons with history of head injury and alcohol or drug abuse.

Onset is very rapid. Patient may have been in perfect good health just before the onset of the illness. The presenting symptoms include poor attention and concentration. The patient is very easily distracted, so much so that he is unable to hold a sustained and meaningful conversation. The sensorium may wax and wane; one moment he is conscious and alert, the next moment he is drowsy. Disorientation, especially for time and place, and confusion are present. There is impairment of immediate recall and recent memory but remote memory is intact. Visual hallucinations are often present. Mood is fluctuating and ranges from acute fear and panic to depression or even euphoria. Sleep is disturbed. In severe cases there may be complete insomnia or reversal of sleep-wake cycle. Patient may talk irrelevantly. At times, he is hyperactive, even excited to the point of exhaustion, or may remain dull and lethargic, hardly taking any interest in his surroundings.

Course

Delirium is reversible, if underlying cause is diagnosed and treated. Many untreated cases also recover spontaneously. In some cases, delerium may progress to dementia and is sometimes followed by depression or post traumatic stress disorder. Ten to thirty per cent of patients may progress on to coma or death.

Management

Management is to identify the cause and treat it. General nursing care, good nutrition and maintenance of fluid and electrolyte balance are essential components of treatment.

The patient should be kept in a dimly lit room during night time. Frequent visiting by the staff and family, and explanations and reassurances from the staff help in improving orientation.

Haloperidol 2-10 mg I/M stat and SOS is effective in controlling agitation. Oral haloperidol in dosage of 5-20 mg/day in divided doses should be given. For insomnia, benzodiazepin such as diazepam 5-10 mg HS given orally can be prescribed. Once the symptoms are over, treatment may be given for another week, and then gradually stopped.

Check Your Progress 4

1) What are clinical features of Delirium?.

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2) How will you differentiate Delirium from Dementia?

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3.7 ORGANIC AMNESIC DISORDER

In organic amnesic disorder, there occurs impairment in recent memory (impaired learning of new material), and anterograde and retrograde amnesia in the presence of clear consciousness and no impairment of other cognitive functions. Immediate recall is not affected.

There is history of objective evidence of brain insult involving hippocampal region. Common causes include thiamine deficiency associated with alcohol dependence, brain trauma, cerebral hypoxia and cerebral tumors involving hippocampal region.

Treatment

Treatment is aimed at the cause. If thiamine deficiency is the cause, thiamine supplementation in doses of 100 mg/day is indicated.

3.8 LET US SUM UP

The dementia's are a group of brain diseases that lead most often gradually to the loss of mental functions including memory and other intellectual and functional abilities. More than 70 different conditions can cause dementia's. The term does not imply a specific cause or pathologic process. Common symptoms are disturbance in memory attention and orientation changes in personality and in daily living.

Alzheimer's type is the commonest form of dementia. We do not know the cause. It is insidious and slow growing disease. It has no specific treatment nor any specific drug so far. It not only afflicts the victims but devastates the whole family.

3.9 KEYWORDS

Alzheimer's Disease : Primary degenerative cerebral disease of unknown aeitiology with characteristics neuopathological neurochemical features.

Dementia : Group of brain disease results in loss of mental function and functional abilties.

Pseudodementia : Depression mimicking dementia.

3.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1) Dementia is defined as group of brain diseases, characterized by loss of mental function including memory, intellectual and functional abilities.

2) Three types of Dementia include Dementia associated with primary disease of brain, infections, degenerative condition and endocrine diseases, Amnestic Disorder, and unspecified dementia.

Check Your Progress 2

1) Alzheimer's disease is defined as primary degenerative cerebral disease of unknown aetiology with characteristic neeuropathological and neuro chemical features.

2) There are three steps in arriving at diagnosis.

   Ist Step : Documentation of loss of cognition.

   IInd Step : Documentation that the loss of cognition is disabling the patient in Activity of daily living.

   IIIrd Step : Exclude other causes of loss of cognition.

3) There are two established risk factors

   1) Increasing age

   2) Genetic Defects

4) Clinical features includes 1) Impairment of memory, 2) Subtle personality changes, 3) Mild anxiety and depressive symptomns present in early stages.

Check Your Progress 3

1) Rivastigmine

2) Impaired orientation

Check Your Progress 4

1) Clinical freatures include 1) concurrent disturbances of consciousness, attention, perception, thinking, memory, psychomotor behaviour, emotion and sleep cycle, 2) usually transient condition and has fluctuating course.

2) In delirium the onset is acute, duration usually >1 month, orientation is impaired, thinking is disorganised and attention is poor. Awareness and alertness is fluctuating.