Preventing and diagnosing dementia

In this article...
- Risk factors, signs and symptoms of dementia
- Diagnosing dementia
- Strategies to minimise the risk of dementia

5 key points

1. Dementia is an umbrella term for a range of chronic, progressive brain diseases that result in problems with memory, language and functioning.

2. Without early recognition and diagnosis, people with dementia do not always have access to the support, advice and treatment they need (ADI, 2011). This article focuses on the factors thought to contribute to dementia, common signs and symptoms, and current methods of diagnosis. It also discusses the stigma attached to a diagnosis of dementia and its potential effect on individuals.

3. A person-centred approach that empowers the individual with dementia is fundamental to best practice.

4. Apart from vascular dementia, which has a more 'stepped' progression, most forms of dementia involve a gradual decline in mental functioning.

5. Cardiovascular disease and insulin resistance are linked to more than one form of dementia, so many preventative measures focus on minimising these risks.

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While dementia is an umbrella term for a range of degenerative brain disorders, many share similar presentations. Nurses are ideally placed to identify those at risk and empower them to access treatment and plan and prepare for their future needs – as such, they need up-to-date knowledge of the signs and symptoms of the different types of dementia to identify risk factors and make an informed diagnosis. This article, the third in a four-part series on dementia, examines the risk factors, signs, symptoms and diagnosis of dementia, as well as outlining lifestyle factors such as diet and exercise that may help to prevent the development of the condition.

Of all long-term conditions, dementia and cognitive impairment are perhaps the most significant contributors to disability (Alzheimer’s Disease International, 2015), and it has been estimated that the health and social care bill for dementia in the UK almost matches the combined costs for cancer, heart disease and stroke (Leungo-Fernandez et al, 2010). Despite the scale of this issue, poor recognition and diagnosis remain a problem; without diagnosis people with dementia do not always have access to the support, advice and treatment they need (ADI, 2011). This article focuses on the factors thought to contribute to dementia, common signs and symptoms, and current methods of diagnosis. It also discusses the stigma attached to a diagnosis of dementia and its potential effect on individuals.

Dementia types and risk factors

Dementia is a term that covers a range of chronic progressive diseases of the brain, all of which have varying causative factors. Some genetically inherited conditions, such as Huntington’s disease or Niemann-Pick type C disease, and other neurodegenerative conditions such as Parkinson’s disease, increase the risk of dementia (Alzheimer’s Society, 2015). People with Down’s syndrome are also at increased risk, and likely to have an earlier-than-average age of onset.

The National Institute for Health and Care Excellence (2010) recommends people with learning disabilities and their carers be given access to specialist dementia advice and support, and staff receive dementia awareness training. Approximately 5% of people with Alzheimer’s disease are thought to have some genetic link (Jenkins et al, 2016), and these patients – as well as their unaffected relatives – should be offered genetic counselling (NICE, 2016).

Key risk factors for dementia are outlined in Box 1. Other factors intrinsic to the individual include the clear link between old age and the incidence of Alzheimer’s disease (ADI, 2015). There is also a higher risk of Alzheimer’s disease in people with...
diabetes and/or atherosclerosis, which is thought to contribute to disruptions in glucose supply and oxygen delivery to the brain (Ojo and Brooke, 2015).

Lifestyle issues are also highly influential in the development of Alzheimer's disease, and are affected by socioeconomic factors that impinge on diet and life choices. For example, diets that are high in fat and low in essential nutrients tend to be cheaper and, therefore, are more affordable for those people who have a low income. In addition, it is more difficult for poorer people to access outdoor space for exercise hence, they are often more sedentary, and they can also find it more difficult to access adult education. Consequently, there is an association between Alzheimer's disease and both lower socioeconomic status and lower levels of education.

People with head injuries, particularly the repeated impact involved in contact sports, are also at increased risk of dementia (Edlow and Hinson, 2015).

Other types of dementia have also been linked to lifestyle issues. Some variants of Creutzfeldt-Jacob disease (CJD), for example, have been associated with eating or handling infected meat, particularly offal (Alzheimer's Society, 2015). Korsakoff syndrome (also known as alcohol-related dementia) can be caused by alcoholism, eating disorders and chemotheraphy (Richardson et al, 2010).

Lifestyle issues are also fundamental to the development of vascular or multi-infarct dementia. Caused by interrupted blood supply to the brain due to small blood vessel disease, microbleeds or cerebral infarction, this type of dementia is subject to the same risk factors as most forms of cardiovascular disease – these include obesity, diabetes, smoking, dyslipidaemia (high cholesterol), and hypertension. Chronic exposure to stress is also thought to have detrimental consequences for the functioning of all systems of the body, and seems to accelerate the ageing process (Andel et al, 2012).

The higher rates of hypertension and diabetes that are found in older people of Asian and Afro-Caribbean origin in the UK also contribute to a higher incidence of cardiovascular disease and, consequently, higher and earlier incidence of vascular dementia (Adelman et al, 2011; Moriarty et al, 2011). Controlling hypertension and blood sugar levels, as well as reducing other modifiable risk factors is crucial. However, this is a complex issue that is influenced by other factors that affect the education and lifestyle of different ethnic groups.

### BOX 1. KEY DEMENTIA RISK FACTORS

- Alcoholism
- Atherosclerosis
- Chemotherapy
- Chronic stress/ anxiety
- Diabetes
- Eating disorders
- Eating/handling meat infected with the Creutzfeldt-Jakob disease prion
- Genetically inherited conditions, such as Huntington's disease or Niemann- Pick type C disease
- High cholesterol
- Hypertension
- Increasing age
- Inheriting the Apolipoprotein E4 gene
- Learning disabilities
- Lower educational level
- Lower socioeconomic status
- Obesity
- Parkinson's disease
- Repeated impact to the head
- Smoking

### BOX 2. ASSESSMENT TOOLS

- Confusional Assessment Method (Short CAM) Bit.ly/HelpCAMShort
- Confusional Assessment Method (Long CAM) Bit.ly/HelpCAMLong
- Geriatric Depression Scale (short) Bit.ly/GDSShort
- Geriatric Depression Scale (long) Bit.ly/GDSLong
- Abbreviated Mental Test Score Bit.ly/RACGPMTS
- Mini Mental State Examination Bit.ly/SimplyPsychMMSE
- Addenbrooke's Cognitive Examination Bit.ly/AddenbrookesCE
- Montreal Cognitive Assessment mocatest.org

### Signs and symptoms

#### Alzheimer's disease

Alzheimer's disease is usually experienced as a gradual decline in mental functioning, which may not be easily identified – particularly in people who live alone and "hide" their difficulties due to fear or shame.

People with Alzheimer's disease often describe the experience as like being in a "fog" (Byrdon, 2005). The symptoms are more complicated than simple loss of memory: signs may include getting lost in familiar places, inability to remember regular routes such as between home and local shops, or visiting a previous address by mistake. People with Alzheimer's disease may also experience difficulty following films or books for example, or forget the names of familiar people or objects. They may also exhibit "odd" behaviour, such as putting shopping in the oven or washing machine, rather than the cupboard or fridge. Similarly, they may behave in ways that are out of character, such as neglecting personal hygiene, making inappropriate or offensive comments, or repeating themselves (Alzheimer's Society, 2015).

Emotional lability is a common feature of Alzheimer's disease and affected individuals may display uncharacteristic extremes of emotion, such as crying or becoming angry very easily. They may also be more prone to falls as spatial awareness is often affected.

Specific issues connected with ethnicity may also exacerbate confusion and distress. For example, as their short-term memory deteriorates, older people who migrated to the UK when young may forget how to speak English and become unfamiliar with British culture (Jenkins et al, 2016).

#### Other forms of dementia

Other types of dementia have specific traits that can help to differentiate them from Alzheimer's disease. People with Korsakoff syndrome, for example, may be more prone to hallucinations. Similarly, dementia with Lewy bodies is characterised by fluctuating levels of cognition and in some cases hallucinations, and can also cause disturbed sleep patterns characterised by twitching or jerking (Alzheimer's Society, 2016).

While most dementias are characterised by gradual decline in mental functioning, vascular dementia has a more "stepped" progression. Marked deterioration is caused by a sudden cardiovascular event, such as a transient ischaemic attack (TIA) or minor stroke; this is followed by a plateau until the next occurrence, which will result in another sudden deterioration (Jenkins et al, 2016).

The manifestations of vascular dementia vary as they relate to the area of the brain that is affected. Memory problems are not necessarily present but there are commonly difficulties with thinking, planning, organisation or problem solving. There may also be alterations in behaviour such as social disinhibition, particularly if the frontal lobe of the brain is affected. As with all types of stroke, emotional lability is common, and the devastating consequences of such a sudden
Incidence of reactive depression (Schulte-Altedorneburg and Bereczki, 2014). Diagnosis

Assessment tools

Diagnosing dementia requires a comprehensive assessment to exclude other causes of cognitive impairment; a range of tools can be used to assist in this process (Box 2). A lowered renal threshold in many unwell older people, for example, predisposes them to delirium (NICE, 2010), which may take the form of reduced consciousness and apparent drowsiness and withdrawal, or can result in hallucinations. Delirium can be precipitated by infection, constipation, dehydration, trauma and anaesthesia – in fact any condition that interferes with homeostasis (NICE, 2010). The Confusion Assessment Method (CAM), which measures criteria such as inattention and disorganised thinking, is recommended to distinguish delirium from other types of cognitive impairment (British Geriatrics Society, 2006).

Depression in older people can also manifest as confusion or uncharacteristic behaviour (NICE, 2016). The Geriatric Depression Scale (Yesavage et al, 1983) is recommended for assessing depression in older people; this uses a questionnaire including questions such as “Are you basically satisfied with your life?” and “Do you feel happy most of the time?”. Older people diagnosed with depression should be offered referral for active treatments such as counselling or medication (NICE, 2016).

Initial symptoms of cognitive impairment can be discerned using the 10-question abbreviated mental test score (AMTS) (Hodgkinson, 1972) or the shorter four-question AMTS (Department of Health, 2007), both of which use a points-based format around questions such as “What is your age?” and “What is the time?” The AMTS is frequently included in hospital admission documents.

For a more formal diagnosis of dementia the most commonly used cognitive assessment tool is the 30-question Mini Mental State Examination (MMSE) (Folstein et al, 1975), although others are available (NICE, 2013). The MMSE asks patients to answer simple questions and solve basic problems in a number of areas including time and place, arithmetic, use of language, and basic motor skills. For example, they may be asked to repeat back a phrase, or to name a common object.

While providing an indication of the problem and its extent, assessment tool results must be used in context with other information such as the healthcare team’s observations and what patients and/or their families say about the condition. Factors such as the time of day and a patient’s education level can also affect the result, as can their physical health, so it is important to reassess patients regularly and monitor their progress.

Diagnostic investigations

A formal diagnosis of dementia should also include:

- Comprehensive history;
- Cognitive and mental state examination;
- Physical examination and investigations;
- Review of medications to identify any that might be causing cognitive impairment.

A basic dementia screen should include routine haematology, thyroid function tests, serum vitamin B12 and folate levels, biochemistry tests such as electrolytes, and calcium, glucose, renal and liver function tests (NICE, 2013).

More specific diagnostic tools might include magnetic resonance imaging or computerised tomography to evaluate blood-vessel damage in the brain associated with vascular dementia. Forms of single-photon emission computed tomography can also help to differentiate between Alzheimer’s disease, vascular dementia and fronto-temporal dementia. Cerebrospinal fluid is not routinely tested, but is indicated if CJD is suspected (NICE, 2013).

Over 50% of people with mild cognitive impairment later develop dementia, so this symptom should prompt referral to a memory assessment service (NICE, 2013). These services provide more complex formal assessment in addition to treatment advice and support for people with dementia and their carers. Memory clinics use an array of detailed assessments, such as the Addenbrooke’s Cognitive Examination, which includes measures of language, visuospatial abilities, orientation and memory (Mathuranath et al, 2000), or the Montreal Cognitive Assessment (Nasreddine et al, 2005), which uses a variety of tests including short-term memory recall and visuospatial tasks such as drawing. Memory clinics tend to be multidisciplinary and offer a range of expertise and therapeutic interventions to support people with dementia and their carers (Connelly, 2010), which can ultimately delay institutionalisation.

Early diagnosis empowers people with dementia and gives them an opportunity to plan and prepare for their future needs. It also allows health professionals to plan pharmacological and non-pharmacological interventions that have the potential to improve cognition and quality of life and may affect mortality (ADI, 2011). Any diagnosis, however, should be provided with sensitivity and support, and nurses should remember that people may not want the information forced upon them, particularly as a diagnosis of dementia is likely to cause distress.

However, despite all the tools available, many people still do not receive an early diagnosis (ADI, 2011). Among the barriers to accessing a diagnosis is the societal stigma associated with dementia, which means many people are unprepared to admit they have a problem. This stigma also varies between cultures; some ethnic groups are more likely to take a family-based approach to mental health problems.
rather than seeking outside help (Kendall and Kohler, 2010). A greater awareness of these cultural factors and an improved understanding of dementia care and treatment can assist nurses in overcoming barriers to effective care.

Prevention

Preventive measures centre largely on reducing risk factors, particularly those associated with cardiovascular disease and insulin resistance (NICE, 2013). Consequently, smoking cessation and avoiding obesity are important. In terms of diet, salt intake should be less than 6g (1 tsp) a day, and nurses also need to be aware of “hidden” salts in processed foods, so they can advise patients how to reduce their salt intake. It is also recommended that patients avoid food with a high sugar content, sugar-heavy drinks or the “hidden” sugars in processed foods (Carper, 2010).

A diet that is high in fruit and vegetables is thought to be preventative due to the antioxidants these foods contain, but there is no firm evidence in favour of vitamin or mineral supplements. Tea and coffee may have a protective effect against dementia (but an excess can contribute to hypertension), whereas alcohol is positively harmful as it is linked indirectly to vascular dementia by contributing to hypertension and cardiovascular disease. Alcohol is also a direct cause of Korsakoff syndrome (Carper, 2010).

There are indications that a Mediterranean diet and the Dietary Approaches to Stop Hypertension diet (aimed at reducing blood pressure, cholesterol levels and C-reactive protein, which is linked to cerebral inflammation and cognitive decline), and increases the supply of blood to the brain. Exercise also encourages mindfulness (living in the moment) and the process of concentrating on the tasks required during exercise may strengthen neural connections. Mah et al (2016) link exercise, mindfulness training and cognitive behavioural therapy to reductions in stress and prevention of neurological damage.

There is also a reduced risk of dementia in those who have achieved higher levels of education; this may be due to the increased mental stimulation involved and greater “cognitive reserve” or resilience (Carper, 2010). Hence, intellectually challenging or stimulating activities such as completing crossword puzzles, games like chess, playing a musical instrument or learning a new language may reduce risk of dementia. Similarly, social interaction encourages mental activity and promotes laughter, both of which are protective against cognitive decline (Jenkins et al., 2016).

Conclusion

The rising numbers of older people means that, in the absence of a cure, the incidence of dementia will continue to rise. However, there are many ways in which nurses can identify risk factors, look out for signs and symptoms, and provide people with an accurate diagnosis of dementia. This requires them to keep up to date with dementia-related knowledge and skills so they provide best practice. Nurses must also be able to advise patients about lifestyle modifications such as the importance of diet, smoking cessation and regular exercise to mitigate their risk of developing dementia.

The fourth article in this series will look at how nurses can work with people living with dementia, and their families, to provide the best evidence-based care. NT

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