Diabetes and dementia

Many people, particularly those in the care home setting, have both diabetes and dementia. Further research is needed to determine how the two conditions are linked and, in the meantime, the care of those affected poses significant challenges to healthcare professionals, as discussed here by Diabetes UK Clinical Adviser, Jackie Watts.

Diabetes and dementia are both progressive, long-term conditions affecting older people. There are currently 3.8 million people with diabetes in the UK, including 630,000 as yet undiagnosed, with 10 per cent of this population being over the age of 65 years. Of an estimated 376,250 care home residents, up to one in four have diabetes and two-thirds are thought to have dementia.

There are many different types of dementia, the most common of which is Alzheimer’s disease. Initial symptoms include forgetfulness, repetition, short-term memory loss and impaired word-finding ability. Deterioration is marked by disorientation, impaired reasoning and decision-making, and loss of both daily living and social skills. This can ultimately lead to complete dependence.

It is acknowledged that people with Type 2 diabetes may have a 1.5–2.5 fold increased risk of developing dementia compared with those without diabetes. According to Alzheimer’s Research UK, the number of people who have dementia will reach one million by 2021. This may prove to be an underestimate, given the rising prevalence of Type 2.

The research challenge

There is a general consensus that the reasons underlying the increased risk of dementia with Type 2 diabetes are not completely understood. Research is at a relatively early stage and it is likely to be many years before the precise mechanisms involved are identified and their implications extended into clinical practice.

Reviews of studies to date have concluded that such processes are, in themselves, multifactorial. They may include: vascular effects, effects of repeated hypoglycaemia, protein glycation, impairment of central insulin signalling and insulin resistance in the brain. Both insulin deficiency and excess insulin exposure are seemingly detrimental.

In addition, given the complexity of Type 2 diabetes, genetic predisposition, hypertension, dyslipidaemia, macrovascular disease, depression and drug therapy may all be contributory factors to cognitive impairment.

Ongoing research examining the relationships between brain glucose metabolism and the role of insulin in cognitive function should help to raise opportunities for the development of various new preventative and therapeutic strategies. Diabetes UK is funding several studies in this area. The charity’s researchers are looking at connections between signalling pathways that link diabetes with changes to certain brain proteins that can cause both depression and cognitive decline. Another study is investigating whether Alzheimer’s drugs that inhibit the enzyme beta-secretase-1 (associated with Alzheimer’s disease) can reverse, or even prevent, Type 2 diabetes in mice.

Diabetes and dementia – clinical concerns

While research offers hopes for future therapies and interventions, there remains a need to use currently available knowledge and tools to address issues that are specific to people who have both conditions. Dementia may cause difficulties with management of diabetes, but poorly controlled diabetes can also impact on the safety and wellbeing of people with dementia. Depression is another issue which has a high incidence of overlap and impact in both conditions.

It is clearly pertinent to diagnose both conditions as early as possible and to ensure that steps are taken to prevent deterioration and maximise the value of therapeutic interventions. The recent National Care Home Diabetes Audit concluded that 64.5 per cent of care homes had no policy on screening for diabetes. This contrasts with guidelines which, given the high prevalence of diabetes, have recommended screening on admission to a care home, together with comprehensive assessment for functional loss, including screening for cognitive impairment using a validated tool, such as the Mini-Mental State Exam.

As an alternative screening tool, the Mini-Cog test, has been shown to be easy and quick to administer for initial screening purposes in community settings. It can identify the early stages of cognitive impairment with an 83 per cent accuracy rate. Where findings arouse suspicion, referral to a memory clinic and/or further investigations, including greater depth cognitive assessment, tests for hypoglycaemia, hypothyroidism and vitamin B12 deficiency and a CT brain scan should be performed.

Managing hypoglycaemia

The high prevalence of risk factors for hypoglycaemic events in care home residents with diabetes has been well documented. Irrespective of whether prevention of repeated hypoglycaemia may decrease risk of developing cognitive impairment or dementia, partial impaired awareness of hypos may be a particular problem for care home residents with diabetes. Cognitive or physical impairment may mean that residents are unable to communicate their symptoms to staff.

Strategies to prevent hypos in care home settings include regular medication reviews and tailoring diabetes medication to the individual (including dosage, frequency of administration and timing of meals). Residents who self-medicate may need assistance to support accurate administration, particularly if they are developing early-stage memory loss. In the National Care Home Diabetes Audit report, 17.3 per cent of homes had no system of checking self-medication for diabetes.

Hypo prevention also involves an awareness of eating habits, especially where there is erratic and inconsistent or
poor carbohydrate intake. A review by a registered dietitian should be performed with individuals who have experienced recurrent hypoglycaemia and glycaemic goals should be revisited, as they may need to be relaxed. An individualised, and regularly updated, care plan is paramount to maximise cognitive and physical function, particularly where there is co-morbidity. Additionally, it has been recommended that care homes have a written policy, as well as training for staff in hypoglycaemia recognition, treatment and prevention. The audit found that 36.7 per cent had no written policy for managing hypoglycaemia.

Hypoglycaemic avoidance, optimising blood glucose and having blood pressure on target have been cited as strategies that are likely to help maintain cognitive performance. For people with diabetes who develop dementia, potential issues may include medication errors (forgetting or duplicating doses, forgetting how to inject insulin), eating irregularities (forgetting or duplicating meals), decision-making difficulties and problems with interpreting blood glucose test results.

People with dementia who develop diabetes may have problems with incontinence, as they need to pass urine more often, increased confusion if blood glucose levels are high, and agitation and distress from altered diets and medication needs. 

The way forward

Strategies to address these issues require a knowledge of both conditions, and skills to support patients and carers. Older patients with multiple and interactive pathologies cannot be treated effectively by single pathways, agencies or disciplines. In the words of the British Geriatrics Society, ‘the needs of care home residents requires coordinated input from generalists and specialists of multiple disciplines in partnership with social care professionals and care home staff’. Diabetes UK has its own awareness training for carers – contact commissioning@diabetes.org.uk for details.

Points to consider in providing care for those with diabetes and dementia in care homes

- Screening and diagnosing diabetes early in people who already have dementia is important to ensure they receive regular review and management of the risk factors that can lead to the development of diabetes complications.
- Screening for cognitive and mood impairment on admission, and at regular intervals, for people with diabetes will help to identify problems at an early stage to enable therapeutic intervention.
- Blood glucose targets should be agreed at safe levels that aim to avoid symptomatic hyperglycaemia, but also avoid hypoglycaemia.
- Ensure adequate carbohydrate intake – this may mean a change of medication to accommodate eating preference, or food substitutes for poor eating.
- Relief from pain and hypo avoidance can reduce agitation which, in turn, can improve eating and nutrition.
- Staff training to acquire knowledge and skills in both conditions is paramount.
- Development of a patient-centred care plan and regular structured multidimensional review will identify changes in need.

References

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Further reading

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