THE EFFECT OF VISUAL IMPAIRMENT ON PATIENTS’ FALLS RISK

Mel Newton and Allyson Sanderson discuss common ocular conditions and how staff can tailor care to improve older people’s quality of life.

Abstract

When older people fall it can result in injuries and adversely affect quality of life. People with visual impairment are at greater risk of falling. This article explores the risk of falling and preventive assessment in patients with visual impairment, whether they are in long-term care settings or living in their own homes. Five types of visual impairment common to older people are discussed. The importance of assessment for falls prevention and suggestions for practice are highlighted.

Keywords
Communication, falls, risk assessment, visual impairment

A FALL is defined as ‘an untoward event in which the patient comes to rest unintentionally on the floor’ (Morris and Isaacs 1980). Falls are common, especially for older adults. The impact of patient falls is significant for several reasons. From a patient perspective, the shock of falling can be humiliating and may enforce a sense of dependence on other people. Harling and Simpson (2008) believe that fear of falling is significant, with confidence often reduced and willingness to engage in social activities adversely affected. As well as affecting quality of life, individuals may be unable to maintain their normal level of independence and require additional long-term care interventions.

Patients might sustain physical injuries caused by falls and often an episode of hospitalised care will result. Falls are thought to account for 70,000 hip fractures a year in the UK (Nazarko 2009). Surgical interventions after fractures for older adults have potential risks, which Brooker and Nicol (2011) suggest can include dehydration, increased confusion due to possible wound infections and reduced confidence through fear of falling, and possible repeat injury. They note that often patients do not regain the level of functional ability and independence they had before surgery (Brooker and Nicol 2011).

Legood et al (2002) suggest that patients with visual impairment are up to seven times more likely to have a fall and risk serious injury compared with those without such impairment. Szabo et al (2008) highlight the risk of morbidity and mortality associated with falls in older women, with approximately one third aged 65 years and older experiencing at least one fall a year. These global figures are mirrored in the UK, with patients over 80 years of age at increased risk (National Institute for Health and Care Excellence (NICE) 2013). Moore and Miller (2003) concur and demonstrate that this risk is as prevalent in older men with severe sight loss.

Warren (2008) acknowledges that older patients may have multiple problems affecting many body systems. The natural ageing process – senescence – and multiple pathologies make care provision complex and challenging. Numerous risk factors are...
link to the incidence of falls including long-term conditions such as heart failure, dementia and Parkinson’s disease (NICE 2013). As systemic and long-term health conditions such as hypertension, diabetes mellitus, hyperlipidaemia, stroke and obesity become more prevalent (Nazarko 2009), reducing falls becomes an important responsibility for every health and social care professional.

Nazarko (2009) highlights the falls-related risks associated with deterioration in function as a result of ageing. For example, patients may experience physiological changes such as altered balance, a change in gait - typically reduced foot clearance when walking, and mobility difficulties due to skeletal or muscular problems.

Gazzaley et al (2007) acknowledge that the cognitive process is complex and a loss of ability is associated with senescence. The brain process of memory incorporates information capture, encoding, transfer between short and long-term memory and recall information. With the sensory process of vision, Brooker and Nicol (2011) state how 80 per cent of information is captured visually, so if this is impaired then the subsequent poor memory pathway is affected. In other words, where patients have some cognitive impairment that adversely affects memory and have a visual problem, the impact is significant.

Visual impairment

The World Health Organization (WHO) (2012) estimates as many as 285 million people worldwide have a visual impairment. Ono et al (2010) highlight how as the trend for population growth continues, visual impairment will remain prevalent, especially that associated with diabetes and age-related macular degeneration (AMD). However, WHO (2012) shows that as a result of improved care interventions related to global infectious diseases, the incidence of visual impairment has reduced.

Initially, it is essential to determine the significance of the visual change and assess visual function. It is also important to assess how function affects the individual, as visual impairment varies from person to person as does the ability to undertake daily activities (Royal College of Nursing (RCN) 2012). WHO (2012) defines four levels of visual function:

- Normal vision
- Moderate visual impairment
- Severe visual impairment
- Blindness

Marsden (2007) discusses the Certificate of Vision Impairment, which can incorporate severely sight impaired or sight impaired as part of the registration process if central visual acuity and peripheral vision are altered. This requires discussion between the patient and ophthalmic consultant before an informed choice can be made and consent gained to issue the certificate. The registration process allows for a full assessment to determine the level of social, financial, physical and psychological support required (Marsden 2007).

Numerous ocular diseases and illnesses can cause visual impairment, but the most common causes of visual loss are shown in Box 1.

**Cataracts** Cataracts are more prevalent in people aged 55 years and older, especially if the risk factors of smoking, diabetes, excess alcohol consumption and excess exposure to sunlight are evident (Horowitz 2010). Cataracts are opacity of the natural lens (Brooker and Nicol 2011). This opacity reduces the amount of light entering the eye, resulting in the common symptoms of gradual decreased vision (pages 16/17), increased glare in bright environments, general dimming of the visual field and alteration in colour and depth perception, which is also known as stereopsis. When a cataract is significantly worse in one eye, stereopsis is severely limited, and Dhital et al (2010) link this to an increase in the risk of patient falls.

Prompt referral via the optometrist or GP for extraction is the only treatment. This process is called phacoemulsification, when the natural lens is removed and an artificial lens implanted, usually under a topical, local anaesthetic as a day case procedure (Brooker and Nicol 2011).

**Glaucoma** This is a common ocular condition, which can incorporate chronic open angle, acute closed angle and ocular hypertension (Kanski and Bowling 2011). Chronic open angle glaucoma is accountable for 10 per cent of all UK registrations for visual impairment and the aim of treatment is to prevent...
and minimise further ocular deterioration (NICE 2009). Horowitz (2010) describes glaucoma as a disease involving an increase in intraocular pressure (IOP), which subsequently leads to damage of the optic disc and peripheral visual field loss if it is not diagnosed and managed effectively.

Effective management of glaucoma includes screening on a six-monthly or annual basis, dependent on the clinical signs for each patient (NICE 2009). Assessment of central vision, a peripheral vision automated test, IOP check, gonioscopy (measuring the angle between the cornea and the iris) and assessment of the optic disc head are all vital to prevent disease progression (NICE 2009).

Management is through pharmacological intervention with topical alpha-2 adrenergic agonists to reduce aqueous production and increase outflow (Brooker and Nicol 2011). Marsden (2007) discusses how patient and carer education is vital to promote concordance with treatment and prevent disease progression. In advancing glaucoma, patients may be more liable to fall because there is peripheral visual field loss (see pages 16/17), which reduces their spatial awareness.

**Age-related macular degeneration** Szabo et al (2008) discuss how AMD is a frequent cause of untreatable visual impairment in older people. AMD is accountable for 50 per cent of people registered as sight impaired or severely sight impaired (Brooker and Nicol 2011).

The normal ageing process causes macular deterioration as a result of leakage from new blood vessel formation and the retinal pigment epithelial cells degenerating without being replaced (Brooker and Nicol 2011). This results in gradual loss of central vision and colour perception, which affects many activities of daily living including the ability to read (see pages 16/17). Horowitz (2010) suggests that depression as well as medication errors can be common in patients with AMD living independently at home.

There are two types of AMD, wet and dry, with only the former being treatable. Management is based initially on thorough assessment of central vision, colour vision, clinical examination and fundus fluorescein angiography to provide accurate diagnosis (Brooker and Nicol 2011). Treatment involves intravitreal injections of antivascular endothelial growth factor, pegaptanib and ranibizumab (Marsden 2007, NICE 2008). These pharmacological agents are believed to stop the formation of new vessels, and slow the rate of progression of AMD (Watkinson 2011). Aids from rehabilitation and low vision services such as magnifiers can help (Royal National Institute of Blind People (RNIB) 2013).

As central vision is reduced, but peripheral visual field maintained (see pages 16/17), Watkinson (2005) highlights how reading signs and negotiating steps and curbs can be challenging, and increase the risk of falling. The importance of adequate lighting is noted.

**Diabetic maculopathy and retinopathy** Diabetes mellitus represents the major cause of sight-threatening disease in the developing world and affects mostly the working population (Brooker and Nicol 2011). Diabetes is recognised as causing a global burden on healthcare provision (Ono et al 2010), and, if it is not adequately managed, it can result in hyperglycaemia, which damages blood vessels and causes leakages into the retinal tissues, resulting in diabetic retinopathy (RNIB 2013) (Figure 1). Diabetic retinopathy affects peripheral vision and diabetic maculopathy affects central vision.

Prevention is the main strategy, with a holistic approach focusing on modifiable risks such as obesity, smoking and physical activity levels, in conjunction with effective management of long-term health conditions such as hypertension or hyperlipidaemia (Department of Health (DH) 2001a).

Management for diabetic retinopathy can include laser treatment. Pan-retinal ablation from multiple laser burns aims to maintain central visual acuity by reducing oxygen levels required at the peripheral retina and increasing oxygen levels centrally at the macula (Brooker and Nicol 2011). This will result in peripheral visual field loss, which in some patients may be called ‘tunnel vision’. The effect is similar to glaucoma, which affects mobility and increases the risk of falls.

**Hemianopia** A transient ischaemic attack (TIA) refers to a brief time when insufficient blood reaches the brain, usually resulting in no permanent
physiological changes (Brooker and Nicol 2011). TIA can be a sign of an increased risk of stroke. When patients have had a stroke, they can be left with weakness in one side of the body, known as hemiparesis. This can also affect the eye resulting in hemianopia, which is total loss of half the visual field in both eyes (see pages 16/17) (Kanski and Bowling 2011).

This permanent visual loss can be debilitating for the individual and cause problems with balance, increase the number of injuries and possibly result in falls.

Intervention
In line with the National Service Framework (NSF) for Older People (DH 2001b), care staff should be vigilant and refer for specialist opinion if visual changes such as cataracts are suspected, as treatment or corrective surgery can be undertaken. Possible indicators of visual impairment are outlined in Box 2.

Patients with visual impairment might experience increased social isolation and subsequent low mood. Moore and Miller (2003) discuss how the rate of depression is higher for people with permanent visual loss. Watkinson (2011) links this higher rate of depression to changes in the ability to carry out functional activities, which might affect levels of independence.

Annual optometrist reviews for most current glasses prescription should be undertaken (National Patient Safety Agency (NPSA) 2009).

Specialist advice is available for patients who are identified as being at risk of falling to assess reasons for falling and individual care plans to help prevent recurrent falls. The DH (2001b) recommends that eye screening and low vision services are available to patients across all care settings.

There are a wide variety of risk assessment tools that focus on falls prevention (NPSA 2009). Most tools recognise that inappropriate footwear will increase the likelihood of falls and recent falls are a good indicator of further fall incidents.

Pharmacological and non-pharmacological interventions often have side effects such as blurred vision and care should be taken to read information leaflets for new medication. Furthermore, if patients have a visual impairment they may not comply with instructions for taking medication. Care staff should be vigilant to ensure concordance by offering appropriate support. Taking more than one medication increases the risk of falls (NPSA 2009). In addition, medications such as diuretics can cause patients to try to rush to a toilet when urgency of micturition is experienced, therefore increasing the risk of falls.

Environment
Often patients with visual impairment might use furniture as a map of the room and navigate their way by holding onto armchairs, tables or mantelpieces. If care staff discourage ‘furniture walking’, thinking that furniture could move and contribute to a fall, this may result in patients being unable to determine where they are and want to be. Furthermore, if furniture is moved within patients’ living space, it can contribute to a
sense of confusion. Think about the times a bed is slightly moved when spring cleaning and how easy it is to stub a toe and you can imagine the potential for visually impaired patients to self-injure on misplaced furniture. Therefore it is recommended that furniture should not be moved without informing the visually impaired patient. If there is a change to the environment then staff should enable patients to familiarise themselves with the new layout (Watkinson 2005).

Care staff can also minimise risk of falls caused by poor lighting and flooring. Good practice is to ensure that rooms are well lit and floors uncluttered and of the same covering when assisting patients to move. A change in floor covering could be enough to cause a stumble or fall.

Conclusion
This article has discussed common ocular conditions that can cause visual impairment and how they can increase the risk of falls and subsequent injuries. Staff can undertake preventive assessment and tailored care interventions to improve patients’ quality of life and reduce falls risk.

Implications for practice
- Effective communication is essential to determine individual needs.
- A full risk assessment should be undertaken with a focus on falls prevention using an appropriate screening tool.
- Medications should be reviewed regularly by GPs or pharmacists.
- Environmental review should ensure falls risks are minimised in relation to lighting and flooring.
- Refer for specialist opinion if cataract is suspected, as surgery can correct visual loss.
- Ensure annual optometrist reviews for most current glasses prescription.
- Ensure you stand in the ‘known’ field of vision for patients, for example, if they have hemianopia or reduced central vision.

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References


