Visual impairment in the elderly

Visual impairment and blindness are common in older people in Britain and it is becoming increasingly important to develop research and health service priorities accordingly. The population of the UK is ageing rapidly: by 2041, the number of people aged 75 years and above is projected to increase by over 100% and the number of people aged 90 years and above by over 260% (Government Actuary's Department, 2004). It is clear that age-related diseases such as cataract and age-related macular degeneration (ARMD) will assume increasing importance in the public health of the nation, and the symposium in this issue seeks to examine the common causes of visual loss in the elderly in greater detail.

An add-on study to the MRC Trial of Assessment and Management of Older People in the Community published in 2004 revealed that 12.5% of those over the age of 75 years were visually impaired (Evans et al, 2004) (defined as a binocular visual acuity of less than 6/18 Snellen) and that the causes of visual impairment centred on a few common conditions. The study found that 26% had significant visual loss as a result of refractive error, evidenced by significantly improved vision with a pinhole occluder (which simulates the effect of appropriate refractive correction).

This high prevalence of uncorrected refractive error in the elderly has been observed before – in a 1995 study of Baltimore nursing home residents (Tielsch et al, 1995), it was judged that 20% of functional blindness and 37% of visual loss could be treated with adequate refractive correction. In the remaining patients, the major causes of visual loss were ARMD (53%), cataract (36%), glaucoma (12%) and diabetic eye disease (3%); 16% had more than one major cause of visual loss.

Age-related macular degeneration

ARMD is the leading cause of irreversible loss of vision in the West, accounting for up to 50% of all blind registrations and affecting 20–30% of those over the age of 75 years (Evans et al, 1996; Owen et al, 2003). ARMD has proved a difficult disease process to modify, and established treatments have produced relatively disappointing results. Current treatment is aimed at two areas – preventing progression from early to late disease, and the treatment of choroidal neovascularization, which defines 'wet' as opposed to 'dry' atrophic ARMD. The only treatment so far proven to be of benefit in retarding disease progression is the combination of antioxidant vitamins C and E, beta-carotene and zinc identified in the Age-Related Eye Disease Study (AREDS) (Age-Related Eye Disease Study Group, 2001).

Argon laser photocoagulation can be used to treat some choroidal neovascular membranes. More are amenable to treatment with photodynamic therapy (PDT), and controversy abounded in 2003 when National Institute for Clinical Excellence (NICE) guidance restricted its use (NICE, 2003). However, even PDT is of limited effectiveness. ARMD is the focus of extensive research, and new medical therapies based on vascular endothelial growth factor (VEGF) antagonists and intravitreal steroids are currently in clinical trials; macular translocation surgery has also demonstrated some success in patients with severe visual loss, although it is complex surgery which remains experimental.

Cataracts

In contrast, cataracts are eminently treatable and cataract surgery is now the second most commonly performed elective procedure in England on the NHS (Hospital Episode Statistics, 2004). Approximately 300 000 cataract operations are performed in the UK each year, and it remains one of the most cost-effective treatments across the whole of medicine. However, the combination of a rapidly ageing population and a reduction in the threshold at which surgery is considered appropriate have placed additional demands on surgical resources. Additionally, studies have shown that while 30% of those aged over 65 years have a visually impairing cataract in one or both eyes (Reidy et al, 1998), almost 90% of these people are not in touch with eye health services, raising the perennial question of how to direct resources appropriately.

Glaucoma

Glaucoma is generally a chronic and insidious disease (although acute angle closure glaucoma leads to a painful, precipitate rise in intraocular pressure) which untreated leads to blindness through progressive optic neuropathy. Reduction of intraocular pressure reduces the risk of visual loss (Heijl et al, 2002) and can be achieved by topical or systemic medication, argon laser treatment to the trabecular meshwork or surgical intervention. Topical medical therapy with eyedrops is preferred initially as they have fewer associated complications, and the relatively recent introduction of new classes of medication, such as the prostaglandin analogues, has considerably improved its success rate in disease control.

Glaucoma patients require lifelong treatment and follow up, placing a heavy burden on outpatient resources. There are more than 170 000 referrals for suspect glaucoma per year in the UK, of whom two-thirds require long-term follow up. This large and increasing workload has driven the Department of Health to consider moving more glaucoma screening and follow up to community optometrists in order to free up hospital resources (National Eye Care Services Steering Group, 2003).

Diabetes

Diabetic eye disease is a less frequent cause of significant visual impairment in the elderly, but is potentially preventable and treatable. There are conflicting reports as to the prevalence of visual impairment among diabetics, but it is reported at 5–10% in large studies (Williams et al, 2004). Diabetes mellitus affects at least 2% of the population now (Amos et al, 1997) and its prevalence is expected to more than double by 2010 – ophthalmic screening and treatment will have an increasingly important role to play.

Several large trials have demonstrated that strict control of systemic risk factors leads to a more favourable visual outcome in both type 1 and type 2 diabetics (Diabetes Control and Complications Trial Tesearch Group, 1993; UK Prospective Diabetes Study Group, 1998). The mainstay of treatment for both proliferative diabetic retinopathy and maculopathy is argon laser photocoagulation, with pan-retinal photocoagulation halving the 5-year risk of severe visual loss in proliferative diabetic retinopathy (Diabetic Retinopathy Study Research Group, 1981) and macular laser halving the risk of moderate visual loss in patients with clinically significant macular oedema (Early Treatment Diabetic Retinopathy Study Research Group, 1985). New treatments currently entering the mainstream include intravitreal steroid injections and anti-VEGF compounds, as well as a greater role for vitrectomy surgery.

Conclusions

A substantial proportion of visual impairment in older people in Britain is caused by refractive error and cataract, both of which can be treated with well-established safe and effective interventions. The challenge is how to deliver these interventions in a timely fashion in this age group. Glaucoma can also be successfully treated in the most part, although the lifelong follow up required places a heavy burden on outpatient clinics. There is little in the way of preventive or curative intervention for ARMD at the present time, indicating the importance of low vision services, although we can hope that new treatments will improve the long-term outlook. BJHM

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KEY POINTS

- Visual impairment is common in the elderly.
- Refractive errors and cataract are easily identified and treatable.
- Age-related macular disease is the most common cause of irreversible blindness but some new management options are becoming available making it important that disease is recognized early rather than late.
- Glaucoma is painless and causes visual loss which is non-recoverable.
- Diabetic retinopathy particularly maculopathy is increasing and needs to be identified early as treatment may prevent further visual loss but rarely reverses what is already lost.