A nurse-led approach to diabetic retinal screening

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Diabetic retinopathy is the leading cause of blindness in people under the age of 60 in industrialised countries (NICE, 2002). This article discusses a nurse-led approach to diabetic retinal screening currently being undertaken at the Western Eye Hospital, London.

In industrialised countries diabetic retinopathy is the leading cause of blindness in people under the age of 60 (NICE, 2002). Ninety per cent of people with type 1 diabetes have some degree of diabetic retinopathy within 20 years of diagnosis and more than 60 per cent of people with type 2 diabetes will experience this complication (NICE, 2002). It has been suggested that it is present at diagnosis in 40 per cent of those with type 2 diabetes (Cummings, 2002). However, treatment can prevent blindness in 90 per cent of those at risk if applied early and adequately (DoH and BDA, 1995).

The delivery strategy for the National Service Framework for Diabetes (DoH, 2003) has prioritised retinopathy screening in the UK as one of two critical national targets. By 2006 a minimum of 80 per cent of people with diabetes should be offered screening for the early detection and treatment of diabetic retinopathy, rising to 100 per cent by the end of 2007.

Diabetic retinopathy

Retinopathy is a vascular complication of diabetes mellitus. The predisposing factors include:

- Hyperglycaemia;
- Hypertension;
- Hyperlipidaemia;
- Long duration diabetes;
- Genetic predisposition.

James et al (2003) have classified diabetic retinopathy according to the stage reached and presenting clinical features (Table 1).

At the Western Eye Hospital a nurse-led approach to diabetic retinal screening is well established and underpinned by an evidence-based protocol (Table 2, p34). It is being undertaken by senior ophthalmic practitioners as part of a weekly clinic in the outpatient department. This service was first established in 1998. A combination of digital photography and slit-lamp biomicroscopy is used to perform this procedure. Sharp et al (2003) conclude that digital imaging is an effective method and has lower technical failure rates compared with conventional photography. Patients are referred to the clinic from primary, secondary and tertiary care services.

Presentation at clinic

On arrival at the clinic the patient is welcomed by the nurse practitioner. Effective communication skills are key in establishing good rapport, reducing anxiety and gaining the patient’s confidence and cooperation prior to and during the procedure. The sense of vision is often not fully appreciated until it is compromised. Thus, impairment or potential impairment of vision can create feelings of anxiety about blindness (Vafidis, 1997).

As part of the medical assessment, the blood pressure is taken and details recorded on the questionnaire. As part of the ocular assessment, visual acuity is recorded by the ophthalmic nurse for medical and legal reasons. The visual acuity of each eye is measured using Snellen’s Chart. If the patient usually wears glasses, they should be worn during the assessment to achieve the best visual acuity possible. If the acuity is less than 6/12 and the patient does not wear glasses, a pinhole will be used to determine whether the decreased vision is due to a refractive error or pathological changes in the retina, cornea, lens or vitreous. The pinhole assists in determining the best visual acuity possible with a refractive correction. Any significant deterioration in vision will be noted.

The intraocular pressure (IOP) is measured and the optic disc is examined. Dilatation of the pupils is essential for retinal screening to provide a wider and clearer view of the retina during the procedure. However, dilating drops are contraindicated for a patient with relative afferent pupillary defect (RAPD). This condition usually indicates some underlying optic nerve disorder. Therefore, it is essential that the nurse checks the pupils for direct and consensual responses to light to exclude this possibility of RAPD. The nurse can identify RAPD by examining the patient’s eyes with a bright light in a dimly illuminated room. Normally, when a light
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is shone into one eye, both pupils constrict. When a light is shone into the abnormal eye of a patient with RAPD, the pupil of the affected eye dilates rather than constricts. If a RAPD is detected, the patient will be referred straightaway to the ophthalmologist for assessment and appropriate action.

Dilating drops will also be contraindicated for a patient with a history of, or risk factors for, narrow angle glaucoma since this may result in a sudden increase of IOP. If the IOP is found to be too high, then the patient will be referred to A&E or a glaucoma clinic for a clinical assessment by an ophthalmologist. It is useful to mention to the patient that should the eyes become painful and the vision much more blurred later in the day they should return to the A&E department.

Tropicamide and phenylephrine eye drops are instilled to dilate the pupils. Before instilling these drops the patient should be informed that initially this causes a stinging sensation. The ability of the eyes to focus normally is impaired, causing blurred vision and sensitivity to light for a few hours after the procedure. Therefore, it will be difficult to read properly and the patient should be advised for health and safety reasons not to drive or operate any machinery for a few hours afterwards, and to wear dark glasses in bright light for more comfort.

**The health education role**

Health education as a preventative strategy is an important aspect of the nurse’s role in the management of diabetic patients undergoing retinal screening. It is therefore important to review the patient’s diabetic control and to measure and record the blood pressure. Primary and secondary prevention of sight-threatening disease is the aim

<table>
<thead>
<tr>
<th>TABLE 1. CLASSIFICATION OF DIABETIC RETINOPATHY (JAMES ET AL, 2003)</th>
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<tbody>
<tr>
<td>STAGE REACHED</td>
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<tr>
<td>----------------</td>
</tr>
<tr>
<td>No retinopathy</td>
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<tr>
<td>Vision normal</td>
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<td>Background (Figure 1)</td>
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<tr>
<td>Vision normal</td>
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<tr>
<td>Maculopathy (Figure 2)</td>
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<td>Vision may be reduced</td>
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<tr>
<td>Pre-proliferative</td>
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<tr>
<td>Vision normal</td>
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<tr>
<td>Sight-threatening</td>
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<tr>
<td>Proliferative (Figure 3)</td>
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<tr>
<td>Vision normal</td>
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<tr>
<td>Sight-threatening</td>
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<tr>
<td>Advanced</td>
</tr>
<tr>
<td>Possibility of retinal detachment</td>
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<tr>
<td>Vision reduced, often acutely with vitreous haemorrhage</td>
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**REFERENCES**


of diabetic retinopathy care (Walker and Rodgers, 2002). As a health promoter, the nurse’s role is to educate patients about diabetic retinopathy and how it relates to their diabetes. Awareness should be raised about the support and advice offered by such organisations as Diabetes UK and the RNIB.

As a health educator, the nurse should also provide patients and families with reliable evidence and advice about the importance of maintaining good glucose and blood pressure control. Good blood glucose control means maintaining levels at below HbA1c 6.5–7.5 per cent, dependent on the individual’s risk of macrovascular and microvascular complications (NICE, 2002). An increased severity of diabetic retinopathy is associated with poorer blood glucose control (Lloyd et al, 1995).

However, it is also important to help people understand that the temporary blurring of vision that can occur with hyperglycaemia is not retinopathy, but rather osmotic changes in the lens that cause focusing problems (Walker and Rodgers, 2002). Other factors such as presbyopia (age-related blurred near vision) and cataract (opacity of the lens) may also cause blurring of vision.

Maintaining good blood pressure control is also important and an ideal is at or below 140/80mmHg (NICE, 2002). Blood pressure control in people with type 2 diabetes is associated with a decreased risk of retinopathy progression (UK Prospective Diabetes Study Group, 1998). Health education should include the best available research evidence to empower patients to make decisions about lifestyle changes and gain control over their condition.

The procedure

The patient is escorted by the ophthalmic nurse and positioned appropriately and as comfortably as possible at the slit-lamp to face the retinal camera. A brief explanation of the procedure is given again as the patient’s cooperation during the process is key to securing quality digital images of the retina.

The patient is asked not to blink during the photography and to fixate on a green light when looking at the retinal camera. This maximises the clarity of the retinal images. Photographs are taken of the optic disc and the macula in each eye. This takes 20–25 seconds. Two colour photographs are taken of each eye.

Grading is the next stage undertaken in this process. This involves grading the photographs to determine whether any diabetic retinopathy is present and, if so, to assess the stage reached. Grading also involves examining the lens, vitreous, optic disc and the remainder of the retina. The senior ophthalmic nurse will shortly become responsible for this stage. Currently, however, it is performed by an associate specialist in the diabetic clinic.

After the procedure

For those patients in the early stage of diabetic retinopathy, laser therapy is given to preserve the remaining level of sight. It is important to explain to the patient that this treatment will not restore sight already lost. These patients will also be encouraged to achieve the best possible diabetic control in order to increase the likelihood of preserving their vision in the longer term.

Patients with no retinopathy or with mild background changes are given an appointment for a re-examination every 12 months. Those patients with a deteriorating background retinopathy will be examined every six months.

Importantly, depending on the stage of the diabetic retinopathy and the degree of visual loss, advice is given about the services provided by the RNIB in helping and supporting patients to manage visual impairment.

Patients are also advised to visit their optician annually. Appropriate referral to members of the multidisciplinary team such as the social worker should also be made in order to ensure that ongoing needs are met.

Conclusion

The scope of clinical practice for senior ophthalmic nurse practitioners in the outpatient department has been extended by enabling them to undertake diabetic retinal screening for patients with diabetes. They have increased their knowledge of diabetes and diabetic eye disease and have enhanced their technical skills. Consequently, they are delivering quality care underpinned by an evidence-based approach to health education. They are also using technical equipment to perform retinal screening procedures such as slit-lamp biomicroscopy and digital photography.