Diabetic eye disease in primary care

This factsheet was produced under a collaboration between the UK Vision Strategy, RNIB, and the Royal College of General Practitioners.

Key learning points

- The most common diabetes-related eye diseases are diabetic retinopathy and cataract.
- Diabetic retinopathy (DR) is a major cause of irreversible sight loss in the west. In developing economies, cataract is the commonest cause of diabetes-related blindness.
- Those with diabetes also have increased risk of other retinal vascular disease like vein occlusion and increased ocular inflammation and infection.
- Good diabetes control is the best way to prevent diabetic eye disease, though exceptions can occur.
- Control of risk factors is very important in reducing the effects of diabetes in the eye.
- Attendance for diabetic screening is important, patients should be supported to keep their appointments, and practices should try and maintain an up to date diabetic register.

Symptoms of diabetic eye disease

- Commonly there are no symptoms of diabetic eye disease, even when retinopathy is advanced.
Gradual onset of blurred vision may indicate cataract or diabetic maculopathy.
Sudden vision loss may occur with pre-retinal or vitreous haemorrhage – often associated with red floaters in the vision. This indicates proliferative diabetic retinopathy.
Severe pain is a presenting symptom of rubeotic glaucoma, wherein abnormal blood vessels grow over the front of the iris obstructing the drainage angle and causing high intraocular pressure.

**GP management of diabetic eye disease**

- Systematic screening for sight threatening diabetic retinopathy from age 12 years has been implemented across the UK. The GP should register all patients with diabetes so that retinopathy screening can be carried out as soon as possible after diagnosis or moving into the catchment area.
- Diabetic screening is not a substitute for an eye examination, and does not assess the general health of the eye, so patients should still have their regular sight tests.
- Ideally, the GP practice should chase up all patients with diabetes who have had DNA screening or eye clinic appointments to explore the issues and encourage engagement with the programme to reduce risk of irreversible sight loss.
- The GP practice should review diabetes care if sight threatening retinopathy is detected or as soon as retinopathy is first diagnosed to optimise care and prevent progression.

**Those at higher risk of retinopathy incidence and progression**

- Abdominal obesity
- Pregnancy
- Other systemic disease
  - Anaemia
  - Hypertension and hypercholesterolaemia
  - Kidney disease
Diabetic eye disease: prevalence, prevention and evidence base

• Prevalence of diabetic retinopathy in the English Diabetic Eye Screening Programme is relatively high, the most important risk factors being duration of diabetes and blood sugar level (1).
• In type 2 diabetes, diabetic retinopathy was found in 30.3% of patients, and out of this, 2.9% had sight-threatening changes. The rates are much higher in type 1 diabetes (2).
• Recent metaanalysis of 20,000 patients found an approximately doubled risk of age-related cataract in type 2 diabetics, with a younger age of onset compared to people who do not have diabetes (3).
• Epidemiological and interventional evidence supports normal blood sugar levels preventing the development and progression of both diabetic retinopathy and cataract (4).
• Treatment of diabetic retinopathy with laser, vitrectomy and anti-VEGF intravitreal injections is based on outcomes of large randomised clinical controlled trials (5).

Presentation of diabetes with diabetic eye disease

• 20% of people with type 2 diabetes have diabetic retinopathy at presentation, and it is not uncommon for diabetes to first present with cataract or an abnormal retinal appearance.

Eye clinic treatment strategies

• Lens implant surgery is recommended when cataract prevents an adequate view of the retina, a recommendation in addition to the standard indications for cataract surgery. The prognosis for normal vision is good if there is no retinopathy, but
  o surgery may be more difficult because of poor pupil dilation
  o post-operative macular oedema following uncomplicated cataract surgery is three times as common in people with diabetes. It is usually treated with anti-
inflammatory drops but may resolve only after prolonged therapy
  o risk of post-operative infection is higher.

- Diabetic maculopathy (M1 grade NSC) is treated when macular scanning (usually with a machine that performs optical coherence tomography or OCT) indicates retinal oedema close to the fovea or close to a large area of exudate deposited within the retina. Treatment may be either by laser or by intravitreal anti-VEGF injection if macular thickening exceeds 400um (6).

- Pre-proliferative and proliferative retinopathy is usually treated with Argon laser. Many hundreds of burns are applied to the retina (photocoagulation) in order to reduce the oxygen demand on the retina, thereby discouraging new blood vessels to grow.

- Vitreous haemorrhage due to proliferative diabetic retinopathy may be treated with immediate vitrectomy if inadequate scatter laser has been given previously or if the macula is detached. Alternatively, more laser is given if a view is possible, and the haemorrhage is given time (three months) to resolve naturally. Of course, vision will be significantly reduced whilst the vitreous haemorrhage is present.

- Iris or drainage angle new vessels are treated with intravitreal anti-VEGF injection and prompt retinal scatter laser. Consequent glaucoma (called rubeotic or neovascular glaucoma) may be treated with tube implant surgery if drops fail to control the pressure.

- Modification to normal care may be needed for patients with diabetes eg glaucoma drops that contain prostacyclins have been implicated in macular oedema, and for this reason may be avoided in patients with diabetes.

Support and information provision

- The GP is in a key position to give advice to patients with diabetes how to avoid sight loss:
  o Prevention by good diabetic control, healthy diet, smoking cessation, exercise and avoiding excessive weight gain.
  o Early detection and treatment of retinopathy by attending screening photography annually, and eye clinic if referred.
Integrated care is the ideal – diabetic eye disease is only one of many complications that need monitoring, nephropathy and neuropathy are amongst other complications.

**e-Learning for Health**

**Useful Resources**

**People and organisations involved in creating this resource**
- Miss Gilli Vafidis
- Dr Waqaar Shah
- Paul Alexander (College of Optometrists)
- Lesley-Anne Baxter (BIOS)
- The Royal College of Ophthalmologists

**References**

2. Rebecca L Thomas; Frank D Dunstan; Stephen D Luzio; Sharmistha Roy Chowdhury; Rachel V North; Sarah L Hale; Robert L Gibbins; David R Owens Br J Ophthalmol. 2015;99(1):64-68.

