



Diabetic pathology and optometry

In the first of a new series, optometrist Kirit Patel says that community optometrists are better able to run the UK screening of diabetic eye disease and describes the first of several case studies to support this argument

Diabetic patients are complex creatures presenting with multiple eye abnormalities which include refractive changes, cataracts, glaucoma, vascular occlusion, retinal and anterior segment naevi, eyelid and corneal-conjunctival abnormalities, nerve palsies, diplopia, visual field anomalies and other visual pathway abnormalities. Also, various pathologies lie in the periphery which a fundus camera cannot detect. So a simple dilation and retinal photography will not suffice if one was required to provide their diabetic patients with a thorough examination. Who better than your community-based optometrist to carry out all the investigations necessary?

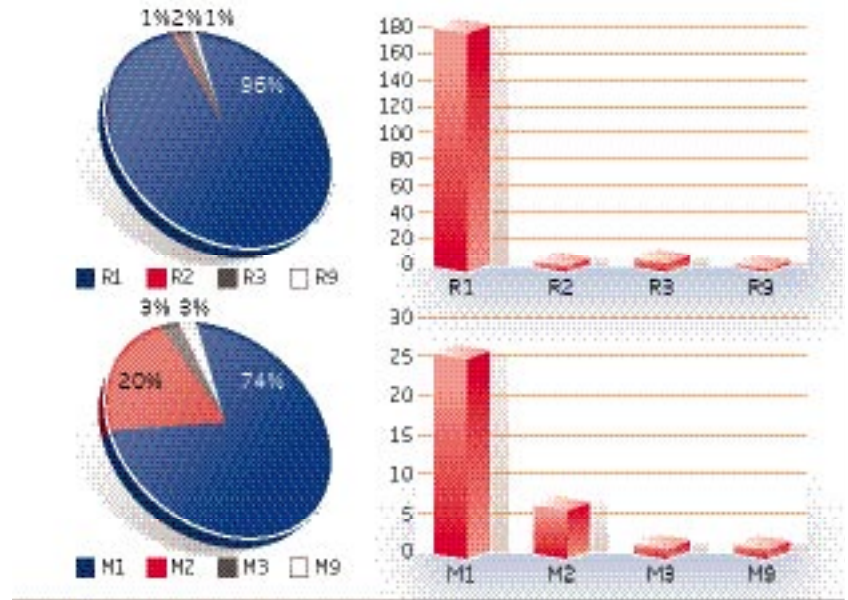


Figure 1 Distribution of retinopathy classification at Radlett Opticians in 12 months

Advantages of optometric screeners

Optometrists are community based so they are easily accessible to local patients, which is especially useful when they are having their pupils dilated

The patients have a close and personal relationship with their optometrists and it provides a relaxed and informal environment for the patient to have their eyes examined

Practices open five to seven days a week and therefore able to offer convenient times for assessment

Patients can contact the optometric practice should any problems with the eyes arise, even if they are not due for their annual check

Diabetic patients are seen annually by the optometrist, so adding an extra 10-15 minutes in the routine would enable them to do the extra examination following dilation as well as retinal imaging and paperwork

Since patients have booked slots, patients feel they are given adequate care and attention

Optometrists now use Volk lenses as a routine for retinal examination and they are able to take a journey deep into the patient's equator and ora serrata region. The periphery of the retina hides a multitude of sins and without dilation and Volk lens or indirect ophthalmoscope examination these could go undetected

All optometric practices have slit lamps to assess the anterior segment of the eyes as well as the vitreous

All optometric practices have tonometers and visual field screeners to monitor for glaucoma and visual pathway defects and some practices have Hess screens to assess for ocular motor or nerve palsies respectively

Optometrists have a good rapport with most ophthalmologists and they are aware of local referral pathways for sight threatening retinopathy.

Advantages for general practitioner surgeries

It is easy for GPs to send their patients locally for eye examination and screening

The GPs and hospital consultants would receive a report grading the retinopathy and advising them of whether further action would be required with regards to systemic control

Our reports contain images for the GP and where there are abnormalities these are annotated on the images

Assessment for cataracts and advice given by the optometrist in terms of the nature of the cataracts saves the GP practices unnecessary referral to a hospital, bringing about savings

The complete assessment at the

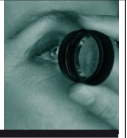
optometric practice saves the patient extra visits to the screening centres and is again a huge cash saving for the PCT.

Clinical audit for the author's optometric practice

Of the 1,700 eyes examined over a period of a year at Radlett Opticians, approximately 88 per cent revealed no retinopathy or maculopathy, R0 and M0

Of the retinopathy observed, 96 per cent was R1 while 1 per cent was pre-proliferative R2 and proliferative R3 accounted for 3 per cent. These are small numbers of serious cases, but they are the ones that need to have urgent or fairly urgent assessment by an eye specialist

Maculopathy grading over that period was done on the old grading system and it was possible to divide the maculopathy into M1 (being 74 per cent of observations) ie microaneurysms within the macular area. The maculopathy consisting of exudates and haemorrhages encroaching or close to the macula being M2 and accounted for 20 per cent of maculopathy observed. While maculopathy and a drop in visual acuity to 6/12 or below plus retinal thickening within the 1 disc diameter of the macula was classified as M3 and this accounted for 6 per cent of maculopathy



observed. Under the current national diabetic grading system we would say there was 1 per cent maculopathy accounting for overall retinopathy/maculopathy seen.

Most diabetics are elderly patients and the chances of them having cataracts or cataract extraction is high. Clinical audit within the practice has found at least 60 per cent of diabetics have cataracts or have had cataract extraction and for optometrists it is essential that the retina is examined in great detail for patients with diabetes to build a true picture. Piecemeal screening programmes put the optometrist in an uncomfortable position with regards to eye pathology behind the cataract and for a nominal NHS fee it is not financially viable to carry out extra tests.

Optometrists are also put in a precarious position with regards to diabetic patients as they assume the patients have had a thorough fundus examination by the screening centres when the reality might be far from it.

Diabetic eye examination

In the author's practice the appointment for diabetic patients involves 40 minutes of thorough assessment. The following protocol is followed:

- Medical history and symptoms – diagnosis can be made from just listening to patients' symptoms
- Refraction
- Intraocular pressure assessment
- Dilation of the pupils
- Volk lens and biomicroscope assessment of the external eye and fundus
- Fundus imaging using a fundus camera
- Grading of the retinal images
- A report is electronically sent to the patient's general practitioner.

I will now use various case histories to illustrate why an optometrist can be invaluable for diabetic retinopathy screening. Using best practice of slit-lamp biomicroscopy, Volk lens examination and (of particular importance) an OCT scanner a comprehensive examination is undertaken.

The first two case reports involve simple diabetic retinopathy observed and the actions that were taken to reassure patient and their general practitioner. Throughout the series I will go through various eye diseases picked up in optometric practice in diabetic patients and the action taken. All images in the series are from the author's image library and they are relevant to the particular patients that I have written about.

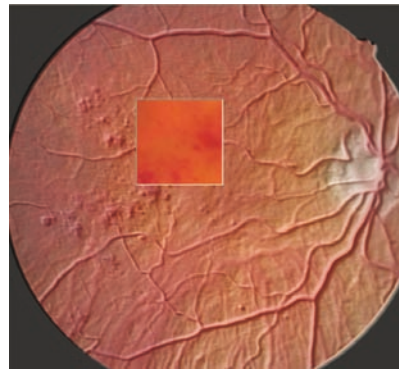


Figure 2a Retinopathy with magnifying square



Figure 2b Background retinopathy

Background diabetic retinopathy

Case history 1 (unexplained drop in acuity):

A 76-year-old male patient came for his diabetic screening. His ocular history involved having bilateral cataract extraction a year earlier and he had been discharged from hospital. He suffered from diabetes, hypertension, hyperlipidaemia and acid reflux. His current medications were insulin, metformin, ramipril, omeprazole, aspirin and simvastatin.

6/18 R -1.00DS (6/12)
Add +3.00DS (N6)
6/18 L -0.75DS / -0.50DC X 45 (6/12)
Add +3.00DS (N6)

Ocular findings:

Right retina showed multiple haemorrhages temporal to the macula but not encroaching the fovea. There were further haemorrhages nasal to the optic disc. The retinopathy was classed

R1 background retinopathy. I have used retinal assessment module to enhance the haemorrhages and a magnifying lens to show the haemorrhages in detail (Figures 2a and 2b)

Left eye had a single haemorrhage close to the fovea and few haemorrhages scattered on the nasal retina. Once again the left retinopathy would be classified as R1 background retinopathy

Left eye fovea showed drusen and pigmentary changes at the fovea.

The patient's dry age-related macular degeneration would explain the drop in his left visual acuity. His right eye also had a drop in visual acuity and it would be simple to assume that the retinopathy close to the macula would be the culprit. Volk lens examination did not reveal any signs of macular oedema and there were no haemorrhages or exudates centrally.

It would have been simple to refer the patient with possible M1 maculopathy, but in the spirit of true professionalism I carried out an OCT assessment to

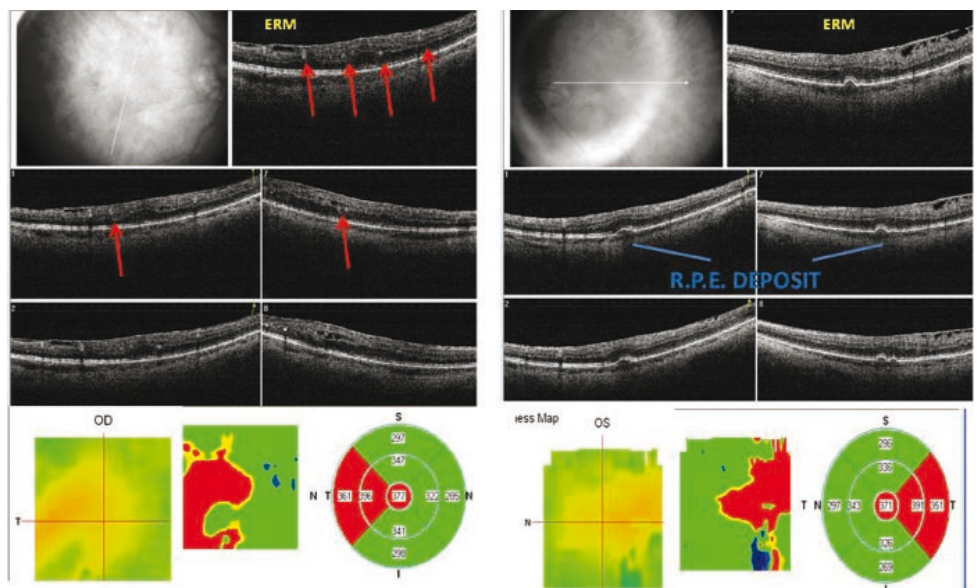


Figure 3 OCT data case history 1



ascertain the cause of his acuity drop (Figure 3).

OCT assessment

Epiretinal membrane in each eye and the pull more central and temporal (ERM)

The haemorrhages in the right eye can be seen in detail and their position clearly identified within the retina (red arrows)

Left eye drusen-like deposit at the fovea. Thickness map shows thickening centrally and temporally. The central thickness in each eye being 370 microns.

Decision taken

The patient was reassured that he had an epiretinal membrane which is a common, idiopathic condition, possibly as a result of his cataract operation. He was told no treatment was necessary and he should control his diabetes more rigorously.

The patient's general practitioner was informed of the findings:

R1 background retinopathy right and left eye

Epiretinal membrane both eyes

Left eye dry age-related macular degeneration.

Case history 2 (careful observation of the retinopathy):

A 74-year-old female diabetic came for her annual eye examination and diabetic screening. Her main complaint was that she could see better without her spectacles for distance vision. She took metformin and glicazide for diabetes and losartan for hypertension and aspirin.

Spectacle prescription:

6/18 R plano / -0.75DC X 70 (6/9)

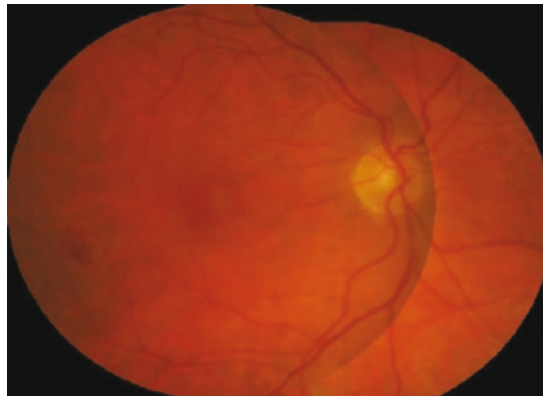


Figure 4a Background retinopathy right eye

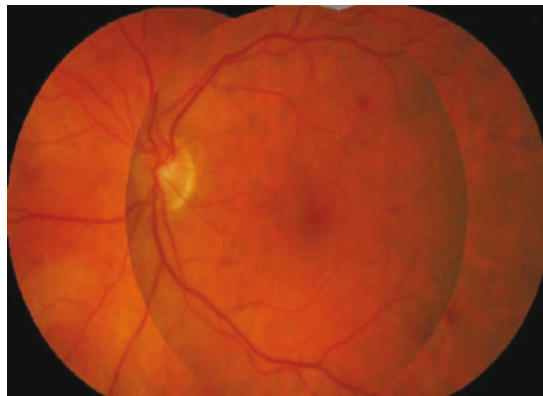


Figure 4b Background retinopathy left eye

Add +3.00DS N5
6/18 L +1.25DS / -0.25DC X 100 (6/9)
Add +3.00DS N5
Her prescription change was -0.50DS myopic shift and this was due to nuclear cataracts.

Ocular findings

Right eye R1 background retinopathy consisting of haemorrhages on the temporal and inferior retina

Left eye R1 background retinopathy consisting of haemorrhages and exudates

superio-temporal and temporal retina and a few on the nasal retina. (Using mosaic view help show the retinopathy clearly)

Volk lens examination suggested possible slight retinal oedema on the superior aspect close to the exudates and haemorrhages (Figure 4).

OCT assessment

Right eye shows normal macular thickness with obvious difference in the thickness nasally and temporally (roughly 260 microns)

Left eye scan shows that in the superior aspect there is definite thickening of the retina. The superior retina appears thicker by 100 microns at 370 microns compared to inferiorly at 260 microns

The haemorrhages and exudates can be seen in detail within the retina. Looking closely at the inner retina (marked by the red arrow) is where that patch of red, round haemorrhage is seen on the superior retina, indicating that the haemorrhages are close to the surface of the retina.

Decision taken

The patient and their general practitioner were informed of the observations. It was also important to stress to both of them that the sugar level needs close monitoring.

Due to the retinal thickening observed on OCT examination it was suggested that we reassess her eyes again in three months to ensure no ischemic or pre-proliferative changes occur.

Conclusion

It was easy for an optometrist to explain the cause of visual acuity drop in our first patient. In our second patient it was vigilance that will ensure no dramatic pre-proliferative retinopathy occurred in a year's time. Fundus examination does not give a complete history and further examination by Volk lens and OCT helps the practitioner to reassure patients. The nuclear sclerotic cataracts are likely to get worse in our second patient and it is likely that the patient is going to become more myopic.

There was no unnecessary referral to an eye specialist, thereby saving the PCT money and helping the hospital's waiting list (a win/win situation).

If you have any strong views on optometrist involvement in diabetic screening, feel free to contact Bill Harvey on William.Harvey@rbi.co.uk

Kirit Patel works in private practice in Radlett, Herts

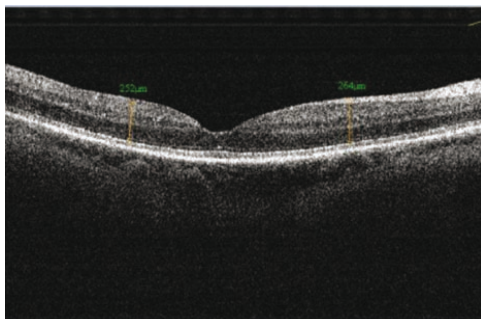


Figure 5a

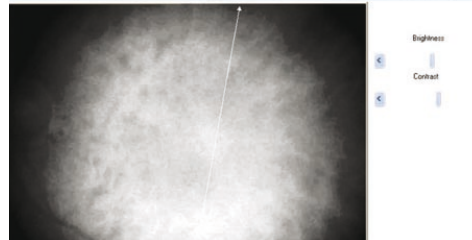
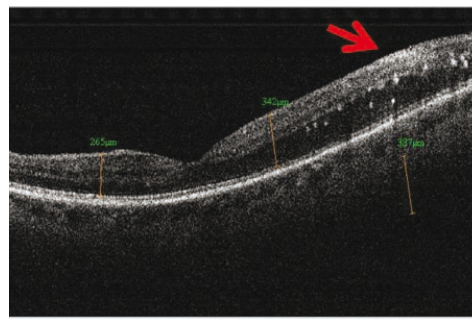


Figure 5b