Quality of optometry referrals to neovascular age-related macular degeneration clinic: a prospective study

Wisam J Muen[1,2] • Simon A Hewick[1]

[1]Highland NHS Trust, Inverness, Scotland, UK
[2]Addenbrooke's University Hospital, Cambridge, UK
Correspondence to: Wisam J Muen. Email: wisam27@doctors.org.uk

Summary

Objectives   To evaluate the quality of referrals to a neovascular age-related macular degeneration clinic from optometrists using the standard Rapid Access Referral Form (RARF) from the Royal College of Ophthalmologists.

Design   A prospective study. Prospective data were gathered from all optometry referrals using the RARF, between the periods of December 2006 to August 2009. These were assessed for accuracy of history, clinical signs and final diagnosis as compared to a macula expert.

Setting   Highlands NHS Trust.

Participants   All patients referred to the eye department at NHS Highlands Trust using the RARF.

Main outcome measures   The symptoms of neovascular age-related macular degeneration correctly identified by optometrists, and the signs of neovascular age-related macular degeneration correctly identified by optometrists.

Results   Fifty-four RARFs were received during this period, there was an overall agreement with symptomatology in 57.4% of cases. Optometrists scored less well in recognizing the clinical signs of neovascular age-related macular degeneration, with the poorest scores for recognizing macular oedema (44.4%) and drusen (51.9%). Twenty (37%) patients referred had neovascular age-related macular degeneration.

Conclusions   RARFs make up the minority of referrals to the neovascular age-related macular degeneration clinic. Optometrists find it difficult to accurately elicit the signs of macula disease.

Introduction

Neovascular age-related macular degeneration is a common cause of visual disability in the Western world. Correct diagnosis and early treatment is necessary to improve visual outcomes. In the UK, specialist clinics have been set up to allow quick referral and management. The UK government has published national patient pathways recommending that filtering of patients with suspected neovascular age-related macular degeneration, either self-referred or from general

practitioners (GPs), takes place in the community by qualified optometrists.[1] To assist in this, the Royal College of Ophthalmologists have developed a Rapid Access Referral Form (RARF)[2] which can be used to refer patients with neovascular age-related macular degeneration directly to the macula specialist.

In our study we assess the use and quality of these referrals over a 21-month period to our department in the NHS Highlands. The department serves a large geographic area, with a population of approximately 250,000. It is a specialist centre for the diagnosis and treatment of wet age-related macular degneration. There is a dedicated age-related macular degneration clinic with specialist facilities and a dedicated ophthalmologist specializing in macular disease.

Method

All optometrists taking part in the study had previously attended an educational meeting on neovascular macular degeneration, as well as an explanation on how to fill in the RARF. This was conducted by a consultant ophthalmologist with a specialist interest in macula disease. In addition they were made aware of the Royal College of Ophthalmologists website with illustrated images of neovascular age-related macular degeneration.

We conducted a prospective study of all optometry referrals using the RARF, sent to our department between the periods of December 2006 to August 2009. These forms were analysed for recorded history, clinical signs and the final diagnosis. We compared these to the history findings, clinical signs and diagnosis recorded by the consultant ophthalmologist with a special interest in macula disease.

The specific points recorded in the history were:

1. Reduction of vision;
2. Distortion;
3. Central scotoma.

The clinical signs assessed were:

1. Haemorrhage;
2. Exudates;
3. Drusen;

4. Subretinal fluid/macular oedema.

All patients were seen within two weeks of receipt of the referral. The optometrist history was taken from the RARF, and this was compared with the history obtained by the ophthalmologist on the same three points. As part of the initial examination a careful note was made as to whether any of the clinical signs above were present or absent.

Results

During the period of study, 54 RARFs were received and analysed as above.

The overall agreement between the specialist and optometrist on all three history findings was 57.4%; optometrists scored well on reduction in vision (85.2%) and distortion (88.9%), but appeared less able to elicit symptoms of central scotoma (61.1%). Optometrists scored less well on correlation with clinical signs (Figure 1), haemorrhage (83.3%), exudates (66.7%), drusen (51.9%) and subretinal fluid (44.4%).

The total number of patients with a correct diagnosis of neovascular age-related macular degeneration was 20 (37%), with the other diagnoses shown in Table 1.
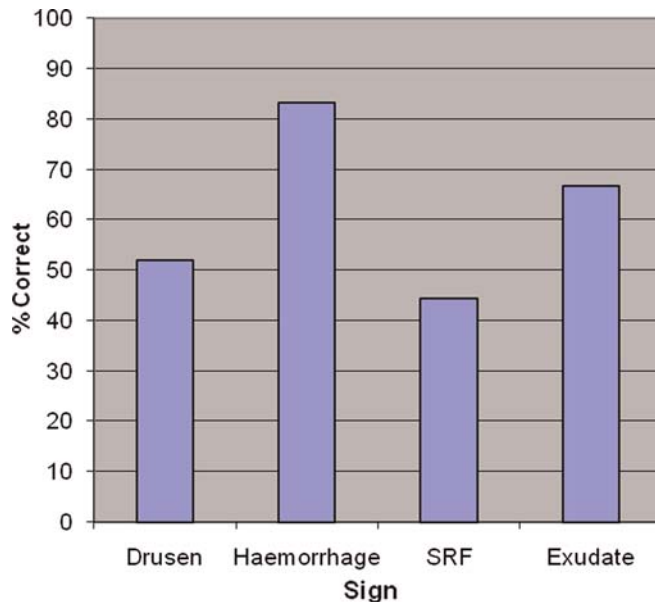
Discussion

The principal findings of our study show that optometrists perform satisfactorily in identifying the symptoms of neovascular age-related macular degeneration, but perform less well in recognizing its clinical signs.

To our knowledge this study is the first to assess the quality of referrals to a neovascular age-related macular degeneration clinic using the fast track RARF in a prospective study. It shows a low level of accuracy which results in a high proportion of patients who do not have neovascular age-related macular degeneration (63%) being seen unnecessarily at the macula clinic. Optometrists may lack confidence in recognizing the clinical signs and diagnosing neovascular age-related macular degeneration, and this may be why the RARF is not used as commonly as it should. Patients are instead referred to eye casualty and general ophthalmology clinics for further assessment and diagnosis. The total of 54 RARFs over

Figure 1

A graph showing the percentage correct diagnosis of each clinical sign by the optometrist

a 21-month period appears to represent a small yield. During the same period 220 new patients with a definite diagnosis of neovascular age-

Table 1

Diagnosis frequency for all patients referred to neovascular age-related macular degeneration clinic

Diagnosis	Patients (n, %)
Exudative AMD	20 (37.0)
Dry AMD	10 (18.5)
ERM	5 (9.3)
BRVO	4 (7.4)
CSR	4 (7.4)
Macular scar	3 (5.6)
PVD	2 (3.7)
Retinoschisis	1 (1.9)
Adult foveo-macular dystrophy	1 (1.9)
Macular hole	1 (1.9)
Vitreomacular traction	1 (1.9)
Glaucoma	1 (1.9)
Diabetic maculopathy	1 (1.9)

AMD = age-related macular degeneration; ERM = epi-retinal membrane; BRVO = branch retinal vein occlusion; CSR = central serous retinopathy; PVD = posterior vitreous detachment

related macular degeneration were enrolled in the macula clinic. Many of these new patients came via the eye casualty and other ophthalmologists' clinics as well as GP referrals. It is difficult to know what exact proportion these 54 referrals constitute of all neovascular age-related macular degeneration referrals, as many patients would have been seen by the other ophthalmologists and where no neovascular age-related macular degeneration was found then they would have been managed appropriately or discharged. However it would be reasonable given the number of new patients enrolled, to assume that this is a low percentage. Optometrists are reasonably accurate at eliciting symptoms from patients, but had the poorest score for 'central scotoma'. It may be that further training would improve this. In contrast, there was poor recognition of the clinical signs of neovascular age-related macular degeneration. Particular difficulty was observed in recognizing subretinal fluid/macular oedema and drusen; the latter were commonly confused for exudates. In recognizing haemorrhage, which received a high score, it would be expected that the remaining discrepancy was because haemorrhage had developed in the two weeks prior to being seen in clinic. However in eight out of nine cases of disagreement, the specialist found no haemorrhage on examining the macula.

There have been studies which show that optometrists are good at screening for conditions such as glaucoma. Blanco et al.[5] selected optometrists after a written exam and then trained them in glaucoma clinics until both parties were satisfied of their clinical skills. They achieved good results for accurate diagnosis and decision to treat, comparable to junior trainees. Other studies appear to contradict this showing a high level of inaccuracy in diagnosis and incomplete assessment on referral forms.[6] It may be that certain optometrists need to be selected with the correct aptitude, and undergo a period of training in specialist centres looking at one particular group of pathologies, such as macular disease.

One method of possibly improving the accuracy of referrals would be to create a telemedicine system with the ability to send referrals with pictures and OCT scans. Cameron et al.[7] found such a system to be useful in improving accuracy of referrals; however in their study they looked at a variety of conditions including cataract, glaucoma

and diabetic retinopathy. Our region covers a large geographic area with a large number of optometrists, and this would represent a considerable cost in order to equip all of their units and provide training. In addition given the anticipated number of referrals it would necessitate the specialist ophthalmologist dedicating clinical time to vet the referral letters and accompanying images, before making the decisions as to whether the patient needs to be seen in the macula clinic or referred elsewhere.

It is necessary in this modern climate for there to be reliable co-dependence between optometrists and ophthalmologists,[3] and optometrists are expected to take on a filtering role for conditions including neovascular age-related macular degeneration. In our study they struggled to achieve accurate levels of sensitivity (37%). Without knowing the number of patients incorrectly diagnosed as having no neovascular age-related macular degeneration, it is not possible to assess the specificity. However it would appear that optometrists in our study have a low threshold for referring any abnormality and so the specificity may indeed be very low. It is likely that the reason for this is that unreasonable expectation is being placed on the optometrist without adequate training. We expect them to accurately take a history and recognize clinical signs, in order to recognise neovascular age-related macular degeneration distinguishing it from other macular conditions with similar features and refer them straight to a macula clinic. This can be very challenging to a group of professionals who have not had regular training in a hospital setting under the supervision of specialist tutors. In our unit we would not normally expect our trainees to adequately do this task unsupervised until many hours of supervised training. Hence optometrists may not be best suitable to perform the screening role.[4]

There has been much debate regarding the role of the optometrist in screening for neovascular age-related macular degeneration.[8,9] It is likely that optometrists can further improve their diagnostic skills with the correct aptitude and training in specialist units. However this does represent a significant commitment in terms of time and cost on the part of the specialist unit/trainer and the optometrist.

References

1 NHS Centre for Change and Innovation. See http://www.pathways.scot.nhs.uk/Ophthalmology/Ophthalmology%20AMD%2023Sep05.htm.
2 See http://www.rcophth.ac.uk/docs/publications/Rapid_Access_Referral_Form_08.pdf
3 Evans BJ, Harle DE, Cocco B. Optometric referrals: towards a two way flow of information? *Br J Ophthalmol* 2005;**12**:1663
4 Law M. Screening without evidence of efficacy. Screening of unproved value should not be advocated. *BMJ* 2004;**328**:301–2
5 Azuara-Blanco A, Burr J, Thomas R, Maclennan G, McPherson S. The accuracy of accredited glaucoma optometrists in the diagnosis and treatment recommendation for glaucoma. *Br J Ophthalmol* 2007;**12**:1639–43
6 Scully ND, Chu L, Siriwardena D, Wormald R, Kotecha A. The quality of optometrists' referral letters for glaucoma. *Ophthalmic Physiol Opt* 2009;**1**:26–31
7 Cameron JR, Ahmed S, Curry P, Forrest G, Sanders R. Impact of direct electronic optometric referral with ocular imaging to a hospital eye service. *Eye* 2009;**5**:1134–40
8 Ellis J, Cole A, Roxburgh ST. Patient pathways for macular disease: what will the new optometrist with special interest achieve? *Eye* 2006;**20**:521–2
9 Verma D: Screening for wet age-related macular degneration by optometrists: Resistance to change or professional rivalry? *Eye* 2007;**2**:272–3