Management of acute proliferative diabetic retinopathy related complications during the first COVID-19 wave in NHS Grampian

N Dhillon, C Witkowski, C Santiago

Aberdeen Royal Infirmary, May 2021

Introduction

Government COVID restrictions in March 2020 forced hospital departments to cancel all non-urgent appointments and re-design ophthalmic services. Emergency optometry and hospital eye services (HES) remained open to prioritise sight threatening presentations. Diabetic retinal screening (DRS) in Scotland was also paused during the period of lockdown. During COVID, a new pathway for acute ophthalmic pathology was created: patients underwent initial assessment by one of six emergency optometry practices across NHS Grampian before referral onto HES.

Patients with proliferative diabetic retinopathy (PDR) are at high risk of poor long-term visual outcomes without prompt management. In an effort to risk stratify patients, the records of all diabetic patients under HES care for their retinopathy were reviewed and patients categorised as high risk were offered priority hospital appointments.

Project Aim

To analyse the characteristics and management of patients who presented to the emergency eye service during the COVID-19 pandemic with complications due to diabetic retinopathy

Methods

This observational retrospective study analysed patient records of those who presented with PDR related complications between 23rd March 2020 and 31st August 2020 inclusive. Follow-up of included patients continued for a minimum of 6 months, until 23rd March 2021.

During lockdown, patients presented acutely to HES from either acute optometry, general practice, other hospital-based department or self-presentation. Referrals were received by telephone or email via a central triage hub, the clinical decision unit (CDU). All email referrals and telephone calls were audited during this period. Patients seen in the ophthalmic acute casualty service are normally entered into an Eye Health database and these records were accessed for audit purposes. The email address, casualty database and telephone data were searched for patients who presented with PDR complications.

Results

52 eyes of 46 patients presented acutely to hospital eye services (HES) with an acute complication of PDR.

Median follow up duration was 6 months (range 1-9 months).

The vision at presentation was CF, which improved to 0.40 logMAR, p=0.001 at last follow up.

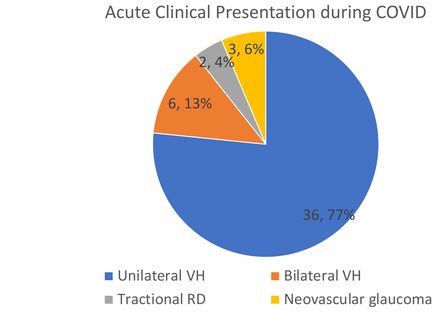
29 patients were already under HES care for their retinopathy. 17 patients had been under DRS, of which, 11 (24%) had been discharged from HES back to DRS: 9 with stable and treated PDR and 2 post DMO management. 6 (13%)were under DRS for non-referrable retinopathy and presented to HES during the pandemic with PDR.

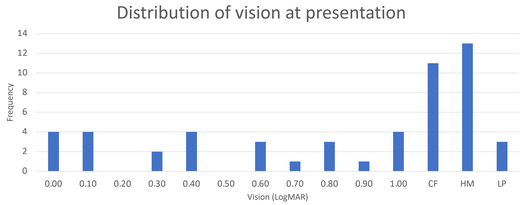
10 of the 17 patients under DRS care had attended their most recent scheduled appointment. 9 had been graded as having non-referrable retinopathy and 1 had already been referred to HES for PDR.

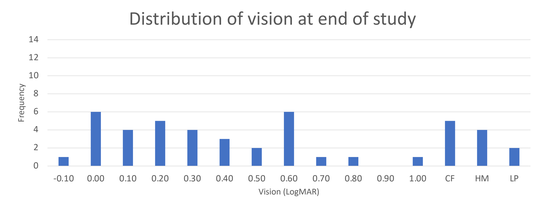
COVID Cancellations. 69% (n=20) of those under HES and 12% (n=2) under DRS had had their scheduled appointment delayed/cancelled due to COVID restrictions.

Demographic	N=46
Age, years, mean ± SD [range]	54.5 ± 15.1 [25-86]
Sex, n (%) • Female • Male	 21 (46%) 25 (54%)
Socioeconomic status, decile ± SD [range] N.B. 1 being most deprived	6 ± 2.5 [1-10]
DM type, n (%) • Type 1 • Type 2 ○ Tablet ○ Tablet + insulin ○ Insulin	 21 (46%) 25 (54%) 9 (36%) 6 (24%) 10 (40%)
HbA1c, mmol/mol, mean ± SD [range]	78 ±18.7 [41-140]
Ocular status at presentation n (%) • Prior Vitrectomy • PRP • Prior Anti-VEGF for PDR • Prior Anti-VEGF for DMO • Tx naïve	 8 (15%) 32 (62%) 19 (37%) 3 (6%) 6 (12%)
Under hospital or community (DRS) care, n (%) • Hospital • DRS	 29 (63%) 17 (37%)
BCVA at presentation, logMAR, median (IQR) [range]	2.00 (0.4 – 2.30) [0.00-2.80]
BCVA at end of follow-up, logMAR, median (IQR) [range]	0.40 (0.20 – 1.00) [-0.10 – 2.80]

Table 1. Patient characteristics







	Anti-VEGF & PRP Median (IQR) [range]	PRP alone Median (IQR) [range]	P value
At presentation	CF (0.70-HM) [0.00 – LP]	1.00 (0.40-HM) [0.00 – LP]	0.140
At 1 month	0.60 (0.25-CF) [0.00 – HM]	CF (0.32-HM) [0.00 – HM]	0.186
At end of study	0.35 (0.20-0.60) [0.00 – LP]	0.60 (0.15-CF) [-0.10 – LP]	0.190

Table 2. The BCVA at three timepoints between patients that received anti-VEGF and PRP vs patients that received PRP alone.

77% presented acutely with unilateral & 13% with bilateral vitreous haemorrhage, 4% had tractional retinal detachment and 6% had neovascular glaucoma.

Management. 18 (38%) were given IVT within 72 hours and two (4%) had PRP the same day. 16 (33%) were rebooked into the laser clinic, 13 (27%) referred for urgent surgical review, and 17 (35%) advised observation and review in clinic.

There was no statistical difference in visual improvement or speed of improvement in the patients who were managed with IVT initially followed by PRP compared to those who received PRP alone, p=0.190 (table 2).

12 eyes (23%, n=52) of 11 patients progressed onto vitrectomy. Of the 3 patients who presented with NVG, one was managed medically, one required cyclodiode laser and another both cyclodiode laser and Ahmed valve to control refractory elevated pressure.

SES. There was no correlation between socioeconomic status (SES) and presenting vision, r(49)= -0.11, p=0.46; nor SES and final vision, r(41)= -0.02, p=0.89

Conclusion

Although routine diabetic screening and HES review was paused, patients reaching out with acute PDR complications were assessed in one of six emergency optometry services. Aided by tele-ophthalmology, referrals to HES were prioritised by urgency. Despite widespread cancellations, those requiring urgent care were met in a timely fashion. Appropriate treatments were adapted and carried out with COVID precautions as recommended.