Virtual clinics for monitoring of hydroxychloroquine retinotoxicity - a working model

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Introduction

- The incidence of hydroxychloroquine (HCQ)-related retinopathy is estimated to be 7.5% after 5 years, increasing to 20-50% after 20 years of use.[1]
- We describe here HCQ retinal monitoring virtual clinics set up in September 2018 and delivered through Liverpool Ophthalmic Reading Centre (LORC), following introduction of guidelines from The Royal College of Ophthalmologists.

Materials and methods

- Referrals for monitoring are received via the hospital e-referral system using a set of questions to obtain information required to guide the choice and frequency of screening tests.

Hydroxychloroquine (HCQ) Retinotoxicity Monitoring Referral

Referring Department	Name of dept
Referring Consultant	A Another
Internal Hospital Number	12345678
NHS Number	123456789O
Patient Name	A Patient
Date of Birth	01/01/2000
Current medication(s) Tick all that apply	HCQ ✓ Chloroquine ☐ Tamoxifen ☐
Others with potential retinotoxicity (please list)	
Indication for HCQ/Chloroquine	SLE
Duration of HCQ	1 - 4 Years
Dose of HCQ	≤ 200 mg OD ✓ > 200 mg OD ☐
Patient's weight (in kg)	kg
Pre-existing eye conditions	YES ☐ NO ✓
If yes, please list condition(s)	
Kidney function	Normal ✓ Abnormal ☐
	If Abnormal, is eGFR ≤ 50 ml/min/ 1.73 m² YES ☐ NO ☐
Other information	

Version 1.2

- Appointments are booked in the virtual clinic within 12 weeks of referral.
- Tests include wide-field fundus autofluorescence (FAF), macular SD-OCT, Humphrey visual fields (HVF) 10-2 or 30-2 as necessary.
- Retinal images are graded by image analysts in LORC.
- Data is entered onto a customised Access database.
- Letters are generated to report monitoring outcomes to the referrer using standard templates, copied to the patient and GP.
- In case of suspected toxicity, consultant overseeing the service advises further action including undertaking electrodiagnostic testing (mfERG).

Results

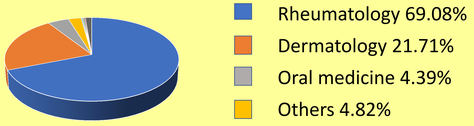
Total number of monitoring visits (over 2.5 years): 525

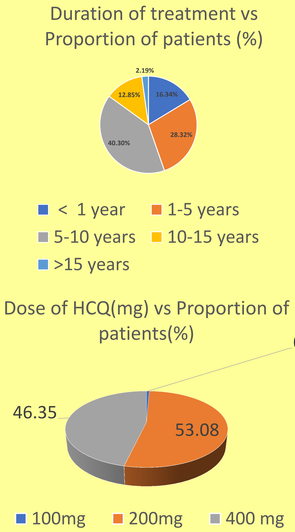
First visit: 375 Follow-up visit: 150

Male: Female = 16.2%: 83.8%

Mean Age (range): 56 years (18-102)

Referrals by specialty:

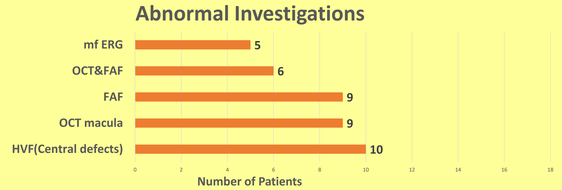




Outcomes in patients with suspected retinotoxicity [2,3]

Possible toxicity: 4.5% (17/ 375)

- Average age: 58.6 years; male: female = 2:15
- Mean duration of treatment: 7.6 yrs (range 1 – 24 years)



Definite toxicity: 1.06% (4/ 375) (Table 1)

- All 4 patients with definite retinotoxicity were asymptomatic, none suffered visual loss
- All 4 patients discontinued HCQ following monitoring outcomes

Patient	OCT	FAF	HVF	mfERG	Comments
1	Abnormal	Abnormal	Unreliable	Suspicious	Mild toxicity
2	Normal	Abnormal	Abnormal	Abnormal	Mild toxicity
3	Normal	Normal	Abnormal	Suspicious	Mild toxicity
4	Abnormal	Abnormal	Unreliable	Suspicious	Mild toxicity

Table 1

Other incidental findings	No. of patients
Dry AMD (drusen, atrophy and pigmentary changes)	120
Wet AMD	1
Advanced AMD	2
Central Serous Chorioretinopathy (suspected)	4
Macular Hole/Lamellar Hole	4
Epiretinal Membrane	12

Table 2

Review of service:

- Average non-attendance rate per month: 21.4% (affected by Covid-19 pandemic)
- Patients discharged from virtual clinic: 29.82 %
- Reason for discharges: 40% due to non-attendance, 40% after baseline assessment, 15% to outpatient clinics for further assessment, 5% – treatment cessation
- While visual fields were part of routine monitoring, interpretation was undertaken by members of the orthoptic team.
- Interestingly many other incidental findings were picked up some prompting outpatient appointments (Table 2)

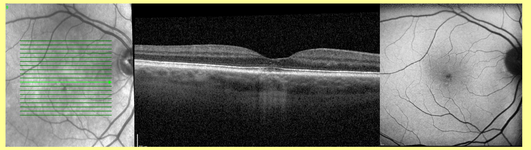


Figure 1: 71 year old female on 400 mg OD of HCQ for 4 years with unilateral changes on OCT & FAF, with abnormal mfERG on two occasions, VA 6/6; opted to stop HCQ.

Conclusions:

- Diagnosing HCQ retinotoxicity can be challenging (Fig 1)
- Prevalence of definite retinotoxicity from HCQ in our practice at 1.06% is comparable to data from other NHS service providers: 1.6% (Marshall et al)[4] and 0.8% (Gobbett et al)[5]
- This virtual clinic model based on multidisciplinary team-working has enabled timely and successful implementation of HCQ retinal monitoring services.

References
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4. Marshall E, Robertson M, Kam S, Penwarden A, Riga P, Davies N. Prevalence of hydroxychloroquine retinopathy using 2018 Royal College of Ophthalmologists diagnostic criteria. Eye. 2021;35:343–8
5. Gobbett A, Kotagiri A, Bracewell C, Smith J. Two years' experience of screening for hydroxychloroquine retinopathy. Eye. 2020.

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