Two years' screening for Hydroxychloroquine Retinopathy

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Introduction

The Royal College of Ophthalmologists (RCOphth) produced new guidelines in 2018 for the screening for Hydroxychloroquine (HCQ) retinopathy [(1)]. New imaging techniques had suggested an increased prevalence of retinopathy (7.5%) compared with previous studies (0.5%) (Melles and Marmor 2014) [(2)].

We report the HCQ retinopathy screening results for all patients seen in our department for the two years beginning 01/11/17.

Method

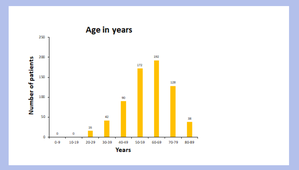
We collected prospective data for all patients referred for screening. Patients were screened according to RCOphth guidelines [(1)]. In addition to retinal imaging, the data recorded included visual acuity, visual fields and mfERG as appropriate, dose and duration of HCQ treatment, the patients' weight and renal function and concurrent use of Tamoxifen

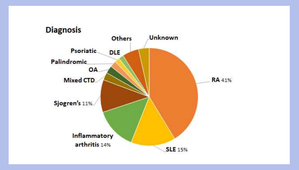
References

1. Hydroxychloroquine and Chloroquine Retinopathy: Recommendations on Screening. RCOphth February 2018
2. Melles RB, Marmor MF. The risk of toxic retinopathy in patients on long-term hydroxychloroquine therapy. JAMA Ophthalmology 2014;132(12):1453-60
3. Hydroxychloroquine and Chloroquine Retinopathy: Recommendations on Monitoring. RCOphth January 2020
4. Gobbett A, Kotagiri A, Bracewell C, Smith J. Two years' experience of screening for hydroxychloroquine retinopathy. Eye (2021) 35: 1171-1177
5. 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 (London, England). Eye (2021) 35: 343-348
6. Hydroxychloroquine and Chloroquine Retinopathy:Recommendations on Monitoring. RCOphth December 2020
7. Gobbett A. Hydroxychloroquine screening in the UK-closing the gaps. Eye (2021). https://doi.org/10.1038/s41433-021-01411-6

Demographics

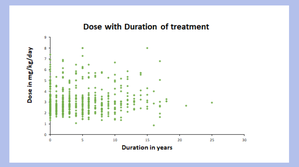
85% female 15% male
98% Caucasian 2% non-Caucasian

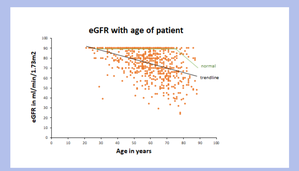


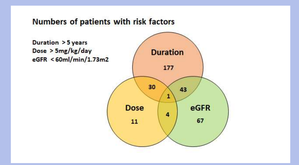


Risk Factors

No patients were taking or had taken Tamoxifen

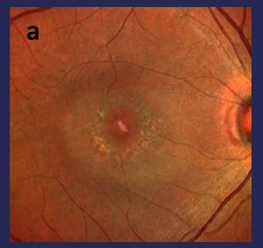


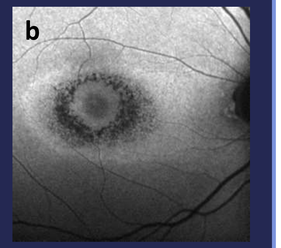


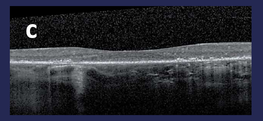


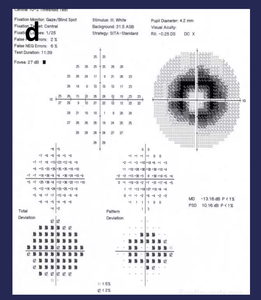
Results

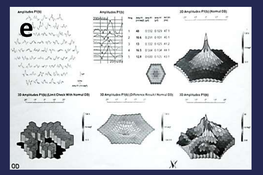
- **742 referred 678 screened**
- **345 baseline tests**
- **333 annual screening**
- **2 definite cases of HCQ Retinopathy**
  (0.3% of all screened, 0.6% of those at risk)
- **2 possible cases**
  (pathological changes in one test only)











Images from Patient 2

a) Marked bull's eye maculopathy on Colour Photography
b) Abnormal pattern of lipofuscin on Auto-fluorescence (AF)
c) Peri-foveal loss of the is/os junction with RPE disruption on Spectral Domain Ocular Coherence Tomography (SD-OCT)
d) Para-central ring scotoma on 10:2 Humphrey visual fields (HVF)
e) Paracentral loss of amplitude on multifocal electroretinography (mfERG)

Discussion

Our two year' results suggest a far lower prevalence of HCQ retinopathy compared with the recent literature. This may be multi factorial:

- We have significant numbers of patients yet to be referred.
- We mainly have baseline images at present, the comparison of serial examinations may highlight more cases.
- We have fewer patients taking higher doses of HCQ . Even accounting for this difference our results remain significantly different from the American study [(2)].
- **The RCOphth's diagnostic criteria [(1)] was tighter than the recent literature [(2)].**

Case Histories

Patient 1
55 year old Caucasian lady with RA,
VA **6/6** BE, asymptomatic.
Dose 200mg/day (3mg/kg/day)
Duration 10 years
Weight 66kg
eGFR 72ml/min/1.73m²

Patient 2
52 year old Caucasian lady with SLE
VA **6/9** BE, asymptomatic
Dose 400mg/day (8mg/kg/day)
Duration 15 years
Weight 50kg
eGFR 65ml/min/1.73m²

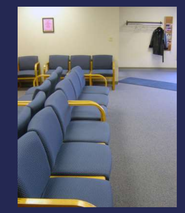
Three new "F" WORDS

Screening has not always been easy:



Fields

Humphrey visual fields can be difficult for patients to do. 17% of our patients had unreliable field tests. We had no spare capacity (either in time or money) to repeat unreliable tests or check for repeatability as suggested by the RCOphth guidelines [(1)].



FTAs

184 appointments were missed, some of these were reappointed and attended, but 64 (8.6%) patients were not seen. We stopped sending out new appointments, putting the onus on the referring doctor and the patient to arrange a new appointment. This goes against RCOphth guidelines [(1)] but was unsustainable for us as a department.



Funding

Two years' screening has cost us approximately £100,000 . Most of the work has been absorbed by the block contract for Ophthalmology. Many units have not been able to screen due to lack of money or staff.

The Future

The RCOphth revisited their screening guidelines in early 2020 and downgraded them to monitoring guidelines [(3)].
Following the publication of two significant studies, our work [(4)] and that of Marshall et al [(5)] the guidelines were significantly altered in December 2020 [(6)].

Baseline testing is no longer required.
Annual screening begins at one year for those at risk:

- **Dose > 5 mg/kg/day**
- **Duration > 5 years**
- **eGFR < 60 ml/min/1.73m²**
- **Concurrant use of Tamoxifen**

SD-OCT and widefield AF only are required.
10:2 HVF testing is only required if one of these is abnormal.

These changes should reduce the cost and time taken for monitoring for HCQ retinopathy, perhaps allowing more units to be able to provide this service, closing the gap [(7)].

There should be no more "F" words!