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Hydroxychloroquine and Eye Toxicity

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Evidence Summary:

In the early 2000s hydroxychloroquine retinopathy was considered to be rare, with an estimated prevalence of 0.5% in patients taking the drug for 6 years (Mavrikakis, I et al, 2003). However largely attributable to improvements in retinal imaging techniques the prevalence of hydroxychloroquine is now estimated to be 7.5% in patients taking the drug for more than five years, and increasing to 20-50% after 20 years (Melles, RB, 2014).

1. Incidence of blindness in a population of rheumatic patients treated with hydroxychloroquine.

Author(s): Singh, Dilpreet K; Muhieddine, Leila; Einstadter, Douglas; Ballou, Stanley

Source: Rheumatology advances in practice; 2019; vol. 3 (no. 1); p. rkz009

Publication Date: 2019

Publication Type(s): Journal Article

PubMedID: 31431997

Abstract: ObjectiveLong-term HCQ use for the treatment of rheumatic diseases has been associated with retinopathy in a daily and cumulative dose-dependent manner by weight. We examined the incidence of ocular toxicity in a large population of patients treated with HCQ for inflammatory arthritis and SLE and followed long term in a tertiary centre.MethodsOur retrospective longitudinal review identified 2867 rheumatic patients from 1999 to August 2017 who had a prescription written for HCQ. Thirty-one patients were identified as having a diagnosis of blindness or toxic maculopathy in their electronic medical record, and we carried out an extensive chart review.ResultsOf our 31 patients with a diagnosis of blindness or toxic maculopathy, 11 had documented blindness, in all cases attributed to a cause other than HCQ-related ocular toxicity: stroke (27%), pre-existing macular disease (18%), diabetic retinopathy (18%), hypertensive retinopathy (9%) and cataracts (9%). Seventeen of 31 patients had visual impairment that was multifactorial and unrelated to HCQ. We identified two patients with bull's eye maculopathy [person-time incidence rate, 0.12 cases per 1000 person-years (95% CI: 0.01, 0.43)] and one with early HCQ toxic maculopathy [person-time incidence rate, 0.06 cases per 1000 person-years (95% CI: 0.002, 0.33)]. All three patients received HCQ for >18 years, and none had functional vision loss at diagnosis.ConclusionHCQ-induced macular toxicity is rare in routine clinical practice, seems to require prolonged HCQ therapy (>18 years) and is not necessarily associated with functional visual loss. Our findings suggest that co-morbid conditions that are common in RA and SLE contribute substantially to vision loss and should not be ignored.

Database: Medline

2. Hydroxychloroquine retinopathy - implications of research advances for rheumatology care

Author(s): Jorge A.; Choi H.K.; Ung C.; Young L.H.; Melles R.B.

Source: Nature Reviews Rheumatology; Dec 2018; vol. 14 (no. 12); p. 693-703

Publication Date: Dec 2018

Publication Type(s): Review

PubMedID: 30401979

Available at Nature Reviews Rheumatology - from ProQuest (Health Research Premium) - NHS Version

Abstract: Despite advances in therapy for rheumatic diseases, hydroxychloroquine remains almost universally recommended for the treatment of systemic lupus erythematosus (SLE), and is often used in the management of other rheumatic diseases such as rheumatoid arthritis (RA). However, the major dose-limiting toxicity of hydroxychloroquine is retinopathy that can lead to loss of vision. New highly sensitive screening methods can identify early stages of retinopathy, and studies that include these modalities have indicated a substantially higher prevalence of hydroxychloroquine retinopathy than was previously recognized, resulting in revisions to ophthalmology guidelines and the recommendation of a low dose of hydroxychloroquine for many patients. However, the efficacy of low-dose hydroxychloroquine for treating SLE and other rheumatic diseases is unknown. Further studies are required to establish the effectiveness and retinal safety of the latest hydroxychloroquine treatment recommendations.

Database: EMBASE

3. The Royal College of Ophthalmologists recommendations on screening for hydroxychloroquine and chloroquine users in the United Kingdom: executive summary.

Author(s): Yusuf, Imran H; Foot, Barny; Galloway, James; Ardern-Jones, Michael R; Watson, Sarah-Lucie; Yelf, Cathy; Burdon, Michael A; Bishop, Paul N; Lotery, Andrew J

Source: Eye (London, England); Jul 2018; vol. 32 (no. 7); p. 1168-1173

Publication Date: Jul 2018

Publication Type(s): Practice Guideline Journal Article Review

PubMedID: 29887605

Available at Eye (London, England) - from Europe PubMed Central - Open Access

Available at Eye (London, England) - from ProQuest (Health Research Premium) - NHS Version

Available at Eye (London, England) - from Unpaywall

Database: Medline

4. Hydroxychloroquine: Balancing the need to maintain therapeutic levels with ocular safety: An update

Author(s): Abdulaziz N.; McCune W.J.; Shah A.R.

Source: Current Opinion in Rheumatology; May 2018; vol. 30 (no. 3); p. 249-255

Publication Date: May 2018

Publication Type(s): Review

PubMedID: 29517495

Available at Current Opinion in Rheumatology - from Ovid (LWW Total Access Collection 2019 - with Neurology)

Abstract: Purpose of review: Antimalarial drugs including chloroquine, its less toxic quinolone-derivative hydroxychloroquine (HCQ), and quinacrine have become cornerstones in the treatment of autoimmune diseases including systemic lupus, rheumatoid arthritis, sarcoidosis, and Sjogren syndrome; cutaneous disorders, antiphospholipid syndrome, and have recently been employed at higher dioses in oncology. Benefits include anti-inflammatory effects, protection against thrombosis, and improved control of hyperglycemia and hyperlipidemia. In general, both the therapeutic advantages and the toxic effects of the drugs correlate with the dose and the duration of therapy. Here we summarize the current literature regarding the administration and the safety profile of HCQ in management of rheumatologic disease and focus on the most recent revised American Academy of Ophthalmology (AAO) guidelines for prevention and detection of hydroxychloroquine retinopathy to help guide therapeutic decision-making for patients. Recent findings: The risk of antimalarial-induced retinal toxicity is better predicted by calculating the daily dosage based on 5 mg/kg total body weight rather than 6.5 mg/kg lean body weight and reducing dosage in patients with risk factors such as renal failure. The risk of retinal toxicity after 5 years is substantially increased even when these guidelines are followed; hence dose reduction is appropriate with long-term use. Newer techniques provide improved detection of early signs of retinal damage. These advances are reflected in the revised AAO guidelines 2016, which are in part based on the retrospective study by Melles and Marmor of HCQ toxicity. Summary: The most important changes in practice guidelines include dose calculation based on total body weight, dose reduction after long-term use, and intensified screening with techniques including optical coherence tomography (OCT) after 5 years.

Database: EMBASE

5. Retinal toxicity related to hydroxychloroquine in patients with systemic lupus erythematosus and rheumatoid arthritis

Author(s): Telek H.H.; Yesilirmak N.; Sungur G.; Ornek F.; Ozdemir Y.; Yesil N.K.

Source: Documenta Ophthalmologica; Dec 2017; vol. 135 (no. 3); p. 187-194

Publication Date: Dec 2017

Publication Type(s): Article

PubMedID: 28852896

Abstract: Purpose: To compare the retinal toxicity due to hydroxychloroquine (HCQ) use in patients with systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA) using multifocal electroretinography (mfERG), fundus autofluorescence (FAF) and optical coherence tomography (OCT). Method(s): Patients who were using HCQ due to SLE and RA, and healthy subjects evaluated in this study. Central foveal thickness (CFT), inner-outer segment (IS-OS) junction irregularity, retinal nerve fiber layer thickness, mfERG and FAF measurements were performed to evaluate retinal toxicity. Result(s): Study included 35 eyes of 35 SLE patients, 40 eyes of 40 RA patients and 20 eyes of 20 healthy subjects. In SLE group, retinal abnormality was found in three eyes with mfERG, in one eye with FAF and in four eyes with OCT. In RA group, retinal abnormality was found in 10 eyes with mfERG, in five eyes with FAF and in nine eyes with OCT. A statistically significant difference was found with respect to mfERG between "eyes with abnormal responses and without abnormal responses" and "eyes with abnormal responses and controls" ($p < 0.05$). A statistically significant difference was found with respect to CFT between "eyes with IS-OS junction irregularities and without IS-OS junction irregularities" and "eyes with/without IS-OS junction irregularities and controls" ($p < 0.05$). Conclusion(s): The use of HCQ seems to cause retinal toxicity more often in RA patients compared to SLE patients. For the early detection of retinal changes, OCT and mfERG can be used as screening tools due to their higher sensitivity rates compared to other tests.

Database: EMBASE

6. Risk of Retinal Toxicity in Longterm Users of Hydroxychloroquine.

Author(s): Kim, Ji-Won; Kim, Yoon Young; Lee, Hwajeong; Park, Sung-Hoon; Kim, Seong-Kyu; Choe, Jung-Yoon

Source: The Journal of rheumatology; Nov 2017; vol. 44 (no. 11); p. 1674-1679

Publication Date: Nov 2017

Publication Type(s): Journal Article

PubMedID: 28864645

Abstract:OBJECTIVESeveral studies have reported risk factors for hydroxychloroquine (HCQ) retinal toxicity, but data are limited for patients of Asian ancestry. The aim of this study was to investigate the rate of and factors for HCQ retinal toxicity in the Korean population.METHODSThere were 123 patients enrolled in this study who were using or had used HCQ. Retinal toxicity was detected using spectral domain optical coherence tomography, fundus autofluorescence, multifocal electroretinography, and automated visual field testing. Binary logistic regression analysis was performed to identify factors associated with HCQ retinal toxicity.RESULTSMean duration of HCQ use and mean HCQ dose in study participants was 10.1 years and 6.4 mg/kg, respectively. We found 17 patients (13.8%) with HCQ retinal toxicity among 123 patients. Patients with retinal toxicity took HCQ ranging from 6.7-21.9 years and daily dosage ranging from 4.9-9.1 mg/kg. Only 1 patient had retinal toxicity among patients with daily dose < 5.0 mg/kg. These factors increased the risk of HCQ retinal toxicity: longer duration of HCQ use [adjusted OR (aOR) = 4.71, 95% CI 2.18-10.15 for duration of HCQ use in 5-yr increments], higher daily HCQ dose (aOR = 3.34, 95% CI 1.03-10.80 for daily HCQ dose in 100-mg increments), and the presence of kidney disease (aOR = 8.56, 95% CI 1.15-64.00).CONCLUSIONHCQ retinal toxicity is associated with duration of HCQ use, daily HCQ dose, and presence of kidney disease. Proper dosing of maximum 5 mg/kg and regular screening according to risk factors are important in HCQ use.

Database: Medline

7. Hydroxychloroquine retinopathy

Author(s): Yusuf I.H.; Sharma S.; Downes S.M.; Luqmani R.

Source: Eye (Basingstoke); Jun 2017; vol. 31 (no. 6); p. 828-845

Publication Date: Jun 2017

Publication Type(s): Review

PubMedID: 28282061

Abstract: Hydroxychloroquine (HCQ; Plaquenil) is used increasingly in the management of a variety of autoimmune disorders, with well established roles in dermatology and rheumatology and emerging roles in oncology. Hydroxychloroquine has demonstrated a survival benefit in patients with systemic lupus erythematosus; some clinicians advocate its use in all such patients. However, Hydroxychloroquine and chloroquine (CQ) have been associated with irreversible visual loss due to retinal toxicity. Hydroxychloroquine retinal toxicity is far more common than previously considered; an overall prevalence of 7.5% was identified in patients taking HCQ for greater than 5 years, rising to almost 20% after 20 years of treatment. This review aims to provide an update on HCQ/CQ retinopathy. We summarise emerging treatment indications and evidence of efficacy in systemic disease, risk factors for retinopathy, prevalence among HCQ users, diagnostic tests, and management of HCQ retinopathy. We highlight emerging risk factors such as tamoxifen use, and new guidance on safe dosing, reversing the previous recommendation to use ideal body weight, rather than actual body weight. We summarise uncertainties and the recommendations made by existing HCQ screening programmes. Asian patients with HCQ retinopathy may demonstrate an extramacular or pericentral pattern of disease; visual field testing and retinal imaging should include a wider field for screening in this group. HCQ is generally safe and effective for the treatment of systemic disease but because of the risk of HCQ retinal toxicity, modern screening methods and ideal dosing should be implemented. Guidelines regarding optimal dosing and screening regarding HCQ need to be more widely disseminated.

Database: EMBASE

8. Hydroxychloroquine retinopathy: an emerging problem.

Author(s): Latasiewicz, M; Gourier, H; Yusuf, I H; Luqmani, R; Sharma, S M; Downes, S M

Source: Eye (London, England); Jun 2017; vol. 31 (no. 6); p. 972-976

Publication Date: Jun 2017

Publication Type(s): Case Reports Journal Article

PubMedID: 28186509

Abstract: PurposeThe aim of this case series is to raise awareness of the emerging issue of serious retinal damage caused by the prolonged use of hydroxychloroquine (HCQ) and the importance of adequate and appropriate monitoring of visual function during treatment.Patient and methodsThis is a small retrospective case series of 3 patients on long-term HCQ who developed serious symptomatic retinal toxicity confirmed on imaging and functional testing.ResultsAll 3 patients were treated with HCQ for over 15 years; two for rheumatoid arthritis (RA), and the third for systemic lupus erythematosus (SLE). All 3 patients had macular involvement varying in severity confirmed with characteristic features on imaging and functional testing (Optical Coherence Tomography (OCT), Autofluorescence (AF) and Humphrey 10-2 visual fields).ConclusionHCQ is widely used to treat autoimmune conditions with a proven survival benefit in patients with SLE. However, long-term use can be associated with irreversible retinal toxicity. These cases highlight that HCQ, like chloroquine, can also cause visual loss in susceptible individuals. Early detection of presymptomatic retinal changes by the introduction of appropriate screening and monitoring is mandatory to limit the extent of irreversible visual loss due to HCQ retinal toxicity.

Database: Medline

9. New ophthalmic monitoring of hydroxychloroquine: Will this lead to more patients having their treatment stopped?

Author(s): Smrity S.; Benson A.; Gupta R.; Gale R.; Green M.; Walters G.; Mackenzie S.; Gough A.

Source: Rheumatology (United Kingdom); Apr 2017; vol. 56

Publication Date: Apr 2017

Publication Type(s): Conference Abstract

Abstract: Background: Hydroxychloroquine (HCQ) is used extensively in rheumatology, principally in the treatment of RA and SLE. Ocular toxicity such as bulls eye maculopathy and central scotoma have been recognized with HCQ, in about 1% on long term therapy. Importantly maculopathy can progress, even when treatment is stopped. Standard screening has included measuring acuity, fundoscopy with visual fields and ishihara plates. In most UK centres this has been done annually, often by opticians, at least up to 500g cumulative dose or>7 years of therapy, after which formal ophthalmic assessments have been widely recommended. In recent years, screening for early HCQ maculopathy with newer techniques, such as Optical Coherence Tomography (OCT), has become widespread. These newer techniques are more sensitive with abnormalities being quoted in up to 10% or more of patients. However detecting early maculopathy, and stopping therapy, can lead to reversal of retinal disease and retention of acuity. This has lead to concern that patients having these new tests may have their HCQ stopped more frequently. In 2014 the Rheumatologists and ophthalmologists in Harrogate and York Hospitals decided to identify and screen a cohort of patients on long-term HCQ, using both standard and newer techniques, including OCT and Humphrey automated perimetry (HVF). Method(s): Patients were identified in rheumatology clinics as having had more than 7 years of HCQ treatment. Data on treatment dose, start date, height, weight, BMI, hepatic and renal function, and previous tamoxifen use, were collected. Patients were then referred to ophthalmology where visual acuity, colour vision testing, retinal photography, HD-OCT, HVF and slit lamp examination were performed by a medical retinal specialist. Secondary diagnoses (e.g. pre-existing colour blindness or age related macular degeneration) were highlighted. The data were collated for statistical analysis. Result(s): 49 patients on long-term HCQ were identified. Average age was 64 years (37-87) and average duration of treatment was 13.8 years (7-25). No patient was on more than 5.5mg/kg/day. These patients had a mean cumulative dose of 1kg HCQ (372-2774g) and none had significant renal or liver disease. All had been for annual optician screening. Eight patients had other diagnoses resulting in reduced vision. OCT scans revealed peri-foveal changes in 4 patients, 2 of whom had early visual field changes and had HCQ stopped. The other 2, and 2 patients with field changes but normal OCT, are under follow up. Conclusion(s): We feel confident that widespread adoption of these new screening tests should be introduced in the UK. Results need to carefully considered before any treatment changes are made. Early detection in two cases may have prevented progression to significant maculopathy and permanent visual impairment.

Database: EMBASE

10. Hydroxychloroquine-related retinal toxicity

Author(s): Ding H.J.; Rao V.K.; Gordon C.; Denniston A.K.

Source: Rheumatology (United Kingdom); Jun 2016; vol. 55 (no. 6); p. 957-967

Publication Date: Jun 2016

Publication Type(s): Review

PubMedID: 26428520

Abstract:HCQ is widely used for the treatment of rheumatic diseases, particularly lupus and RA. It is generally well tolerated, but retinopathy is a concern. Retinopathy is rare, but is sight threatening, generally irreversible and may progress even after cessation of therapy. Damage may be subclinical. Although a number of risk factors have been proposed (such as duration of therapy and cumulative dose), the many exceptions (e.g. retinopathy on low-dose HCQ, or no retinopathy after a very large cumulative dose of HCQ) highlight our limited understanding of the disease process. Novel technologies such as optical coherence tomography (OCT), fundus autofluorescence (FAF) and multifocal electroretinogram (mfERG) may provide the earliest structural and functional evidence of toxicity in these stages. Along with the well-established technique of central visual field testing (10-2 visual fields), these modalities are increasingly being used as part of screening programmes. The ideal single test with high sensitivity and high specificity for HCQ retinopathy has still not been achieved. Screening for HCQ retinopathy remains an area of considerable debate, including issues of when, who and how to screen. Commonly accepted risk factors include receiving >6.5 mg/kg/day or a cumulative dose of >1000 g of HCQ, being on treatment for >5 years, having renal or liver dysfunction, having pre-existing retinopathy and being elderly. HCQ continues to be a valuable drug in treating rheumatic disease, but clinicians need to be aware of the associated risks and to have arrangements in place that would enable early detection of toxicity.

Database: EMBASE

11. Hydroxychloroquine: A Brief Review on Screening, Toxicity, and Progression.

Author(s): Modi, Yasha S; Singh, Rishi P; Fine, Howard F

Source: Ophthalmic surgery, lasers & imaging retina; Mar 2016; vol. 47 (no. 3); p. 207-217

Publication Date: Mar 2016

Publication Type(s): Journal Article Review

PubMedID: 26985794

Available at Ophthalmic surgery, lasers & imaging retina - from ProQuest (Health Research Premium) - NHS Version

Available at Ophthalmic surgery, lasers & imaging retina - from Unpaywall

Database: Medline

12. A Critical Review of the Effects of Hydroxychloroquine and Chloroquine on the Eye

Author(s): Costedoat-Chalumeau N.; Dunogue B.; Morel N.; Jallouli M.; Le Guern V.; Brezin A.P.; Leroux G.; Piette J.-C.; Melles R.B.; Marmor M.F.

Source: Clinical Reviews in Allergy and Immunology; Dec 2015; vol. 49 (no. 3); p. 317-326

Publication Date: Dec 2015

Publication Type(s): Review

PubMedID: 25672591

Available at Clinical Reviews in Allergy and Immunology - from SpringerLink - Medicine

Available at Clinical Reviews in Allergy and Immunology - from ProQuest (Health Research Premium) - NHS Version

Abstract: Hydroxychloroquine (HCQ) and chloroquine have been used for more than 50 years to treat systemic lupus erythematosus (SLE) and other rheumatic diseases. In general, these drugs are well tolerated and rarely need to be discontinued because of an adverse systemic reaction. However, both medications can be irreversibly toxic to the retina. A new study indicates that toxicity is not as rare as once believed, but depends critically on daily dosage and duration of use, as well as other risk factors. With attention to dosage and other factors, and with proper screening for early signs of toxicity, HCQ can be prescribed with relative safety even over long periods of time.

Database: EMBASE

13. The risk of toxic retinopathy in patients on long-term hydroxychloroquine therapy

Author(s): Melles R.B.; Marmor M.F.

Source: JAMA Ophthalmology; Dec 2014; vol. 132 (no. 12); p. 1453-1460

Publication Date: Dec 2014

Publication Type(s): Article

PubMedID: 25275721

Abstract:IMPORTANCE: Hydroxychloroquine sulfate is widely used for the long-term treatment of autoimmune conditions but can cause irreversible toxic retinopathy. Prior estimations of risk were low but were based largely on short-term users or severe retinal toxicity (bull's eye maculopathy). The risk may be much higher because retinopathy can be detected earlier when using more sensitive screening techniques.OBJECTIVES: To reassess the prevalence of and risk factors for hydroxychloroquine retinal toxicity and to determine dosage levels that facilitate safe use of the drug.DESIGN, SETTING, AND PARTICIPANTS: Retrospective case-control study in an integrated health organization of approximately 3.4 million members among 2361 patients who had used hydroxychloroquine continuously for at least 5 years according to pharmacy records and who were evaluated with visual field testing or spectral-domain optical coherence tomography.EXPOSURE: Hydroxychloroquine use for at least 5 years.MAIN OUTCOMES AND MEASURES: Retinal toxicity as determined by characteristic visual field loss or retinal thinning and photoreceptor damage, as well as statistical measures of risk factors and prevalence.RESULTS: Real body weight predicted risk better than ideal body weight and was used for all calculations. The overall prevalence of hydroxychloroquine retinopathy was 7.5%but varied with daily consumption (odds ratio, 5.67; 95%CI, 4.14-7.79 for >5.0mg/kg) and with duration of use (odds ratio, 3.22; 95%CI, 2.20-4.70 for >10 years). For daily consumption of 4.0 to 5.0 mg/kg, the prevalence of retinal toxicity remained less than 2%within the first 10 years of use but rose to almost 20% after 20 years of use. Other major risk factors include kidney disease (odds ratio, 2.08; 95%CI, 1.44-3.01) and concurrent tamoxifen citrate therapy (odds ratio, 4.59; 95%CI, 2.05-10.27).CONCLUSIONS AND RELEVANCE: These data suggest that hydroxychloroquine retinopathy is more common than previously recognized, especially at high dosages and long duration of use. While no completely safe dosage is identified from this study, daily consumption of 5.0 mg/kg of real body weight or less is associated with a low risk for up to 10 years. Knowledge of these data and risk factors should help physicians prescribe hydroxychloroquine in a manner that will minimize the likelihood of vision loss.

Database: EMBASE

14. Hydrochloroquine retinopathy: Characteristic presentation with review of screening

Author(s): Stelton C.R.; Connors D.B.; Walia H.S.; Walia S.S.

Source: Clinical Rheumatology; Jun 2013; vol. 32 (no. 6); p. 895-898

Publication Date: Jun 2013

Publication Type(s): Review

PubMedID: 23515601

Available at Clinical Rheumatology - from SpringerLink - Medicine

Available at Clinical Rheumatology - from ProQuest (Health Research Premium) - NHS Version

Abstract: Hydroxychloroquine (HCQ), an antimalarial drug in use since 1955, is still used with great success in the treatment of systemic lupus erythematosis and other rheumatological diseases. HCQ is generally well tolerated and its side effect profile confers many advantages over many other immunosuppressive agents. However, HCQ is known to induce retinopathy. Unfortunately, HCQ-induced retinopathy can present insidiously with subtle color vision changes and paracentral scotoma, which makes early detection difficult. Moreover, cessation of HCQ does not typically result in resolution of the visual loss, and vision loss may actually continue to progress even after HCQ is stopped. Therefore, identifying those patients most at risk for development of retinopathy is of the utmost importance, and adequate screening of patients taking HCQ is recommended. A brief case presentation of a patient who has developed retinal toxicity from hydroxychloroquine is provided along with a discussion regarding the characteristic retinopathy and review of current screening recommendations. © 2013 Clinical Rheumatology.

Database: EMBASE

15. Drug-induced colour vision disorders

Author(s): anonymous

Source: Prescrire International; May 2012; vol. 21 (no. 127); p. 126-128

Publication Date: May 2012

Publication Type(s): Review

PubMedID: 22827003

Abstract:* Acquired colour vision disorders may be caused by ocular, neurological or metabolic disorders, but they can also be drug-induced. In some cases, these disorders may precede or reveal the onset of severe and sometimes irreversible eye damage. * The drugs implicated mainly include: phosphodiesterase type 5 inhibitors such as sildenafil; digoxin; anti-infectives including interferon alfa; ethambutol; metronidazole; and some antimalarials. Copyright(c)Prescrire.

Database: EMBASE

16. Review: Ocular side effects of anti-rheumatic medications: What a rheumatologist should know

Author(s): Peponis V.; Chalkiadakis S.E.; Kyttaris V.C.; Bonovas S.; Sitaras N.M.

Source: Lupus; May 2010; vol. 19 (no. 6); p. 675-682

Publication Date: May 2010

Publication Type(s): Review

PubMedID: 20144965

Available at Lupus - from ProQuest (Health Research Premium) - NHS Version

Abstract: Nearly every drug may cause changes to ocular tissues through a variety of mechanisms. Medication overdoses, drug-drug interactions but also chronic administration of medications at the recommended doses may lead to ocular toxicity. The ocular side effects, screening for eye toxicity and treatment guidelines for anti-inflammatory and immunosuppressive drugs commonly used by rheumatologists are reviewed herein. © The Author(s), 2010.

Database: EMBASE

17. Ocular toxicity of hydroxychloroquine

Author(s): Tehrani R.; Ostrowski R.A.; Hariman R.; Jay W.M.

Source: Seminars in Ophthalmology; May 2008; vol. 23 (no. 3); p. 201-209

Publication Date: May 2008

Publication Type(s): Review

PubMedID: 18432546

Abstract: This review summarizes the current literature regarding the ocular complications of hydroxychloroquine. Hydroxychloroquine has been used since the 1950s for the treatment of various rheumatic and dermatologic diseases. Hydroxychloroquine can cause ocular toxicity, with the most serious being an irreversible retinopathy. At the present time, no "gold standard" exists for identification of the ocular toxicity prior to its development. This has led to controversy regarding the recommendations for ophthalmologic examinations for screening patients on hydroxychloroquine. Copyright © Informa Healthcare USA, Inc.

Database: EMBASE

Strategy 796566

#	Database	Search term	Results
1	EMBASE	exp HYDROXYCHLOROQUINE/	23065
2	EMBASE	(hydroxychloroquine).ti,ab	7504
3	EMBASE	(1 OR 2)	23567
4	EMBASE	exp "EYE DISEASE"/	886174
5	EMBASE	(ocular OR eye*1 OR vision OR blind* OR retin* OR vision).ti,ab	1187506
6	EMBASE	exp "COLOR BLINDNESS"/	1547
7	EMBASE	exp BLINDNESS/	41728
8	EMBASE	(4 OR 5 OR 6 OR 7)	1643831
9	EMBASE	(3 AND 8)	4769
10	EMBASE	exp "DRUG INDUCED DISEASE"/	91026
11	EMBASE	(9 AND 10)	230
12	EMBASE	exp RETINOPATHY/	95898
13	EMBASE	(3 AND 12)	860
14	EMBASE	13 [Publication types Review] [English language]	229
15	EMBASE	*"RETINA DISEASE"/	6800
16	EMBASE	(3 AND 15)	73
17	EMBASE	(3 AND 6)	5
18	EMBASE	11 [Publication types Review] [English language]	104

19	Medline	exp HYDROXYCHLOROQUINE/	2924
20	Medline	(hydroxychloroquine).ti	1464
21	Medline	(19 OR 20)	3169
22	Medline	exp "EYE DISEASES"/ci	19999
24	Medline	exp "RETINAL DISEASES"/ci	3855
25	Medline	exp "COLOR VISION DEFECTS"/ci	200
26	Medline	"COLOR VISION DEFECTS"/-ci OR exp "VISION DISORDERS"/ci	2694
27	Medline	(eye*1 OR ocular OR retin* OR blindness OR vision).ti	269614
28	Medline	(22 OR 24 OR 25 OR 26 OR 27)	284065
29	Medline	(21 AND 28)	417
30	Medline	(21 AND 26)	66
31	EMBASE	*"EYE TOXICITY"/	3383
32	EMBASE	(3 AND 31)	186