

# SİSTEMİK İLAÇLARIN OKÜLER YAN ETKİLERİ

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**Yazar**

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Bu bağlamda hazırlanan bu eserin, oftalmoloji ve farmakoloji alanında çalışan herkese faydalı olmasını temenni ederim.

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## KAYNAKLAR

1. Peer RF, Shabir N.J Family Med Prim Care. 2018 Mar-Apr;7(2):309-314. doi:10.4103/jfmpc.jfmpc\_329\_17.
2. Permpongkosol S. Clin Interv Aging. 2011;6:77-82. doi: 10.2147/CIA.S10252. Epub 2011 Mar 21.
3. Czakó C., Sándor G., Horváth H., Szepeşy Z., Nagy ZZ., Kovács I. Orv Hetil. 2020 Jun;161(23):951-961. doi: 10.1556/650.2020.31723.
4. Bhatti MT. Orbital syndromes. Semin Neurol. 2007;27:269-287.
5. Last RJ (ed.) Wolff's Anatomy of the Eye and Orbit including the Central Connections, Development, and Comparative Anatomy of the Visual Apparatus, 6th edn. (WB Saunders: Philadelphia, 1968): 30
6. Greve MD. Vitreoretinal surgical anatomy. Peyman GA, Meffert SA, Conway MD. Vitreoretinal Surgical Techniques. 3rd edn. (Informa UK: London, 2007): 2-10.
7. Fine BS, Yanoff M. Ocular Histology. A text and atlas. New York: Harper & Row;1979;163-168.
8. Bengisu Ü. Göz hastalıkları,4.baskı: Kornea Anatomisi ve Fizyolojisi. Ankara,Palme yayıncılık, 1998; 69-72.
9. Tipathi RC, Chalam KV, Cibis GW, Kardon PH, Tipathi BJ, Weleber RG, Wand M. Fundamentals and principles of ophtalmology,American Academy of ophtalmology, Taylor Fran, USA,1999; 150-4.
10. Özdemir Ö. Kornea transplantasyonu. Medikal Network Oftalmoloji Dergisi 1995; 2.1: 6-9.
11. Arffa RC. Disease of the cornea ,fourth edition. Mosby Co. 1997, 6-7
12. William MH. Adler's Physiology of the eye, Ninth edition, Mosby Co.1992
13. Orhan M. Korneanın Yapısı, İşlevi ve Muayene Yöntemleri. Medikal NetworkOftalmoloji Dergisi 1994; 4: 306-311.
14. Cosar CB, Senar AB: Orbscan corneal topography system in evaluating the anteriorstructures of the human eye. Cornea 22:118, 2003.
15. Bengisu U. Glokom - 9. Bölüm. Göz Hastalıkları (4. Basım).1998:139-158.
16. Garner LF, Yap MK. Changes in ocular dimensions and refraction with accommodation. Ophthalmic Physiol Opt 1997;17:12
17. Savage JA. American Academy of Ophthalmology, Gonioscopy in theManagement of Glaucoma, Focal Points, San Francisco, AAO 2006;1-14
18. Apaydın C, Anatomi, Bölüm 1, Temel Göz Hastalıkları (1. Baskı),editörler: Aydın P, Akova YA, Ankara, Günes Kitabevi, 2001;3-25.
19. Ashton N, Brini A, Smith R. Anatomical studies of trabecular meshwork of Normal human eye. Br J Ophthalmol 1956;40:257 .
20. Flocks M. The anatomy of the trabecular meshwork as seen in tangential section. Arch Ophthalmol 1956;56:708.
21. Fine B. Structure of the trabecular meshwork and the canal of Schlemm. Trans Am Acad Ophthalmol Otolaryngol 1966;70:777

22. Francis BA, Cortes A, Chen J et al. Characteristics of glaucoma drainage implants during dynamic and steady-state flow conditions. *Ophthalmology* 1998;105:1708-14.
23. Kozart DM, Anatomic correlates of the retina, in Duane TD, Jaeger EA, eds. *Clinical ophthalmology*. Harper&Row. 1991: Philadelphia. p. 1-13.
24. Newell FE, *Ophthalmology. Principles and Concepts*. 6, Mosby ed. 1986.
25. Matsumoto, B., J.C. Blanks, and S.J. Ryan, Topographic variations in the rabbit and primate internal limiting membrane. *Invest Ophthalmol Vis Sci*, 1984. 25.1: p. 71-82.
26. Green WR, Vitreoretinal interface. In: SJ IR, editor. *Retina*. 3St Louis Mosby ed. 2000. 1882-960.
27. Akar S., A.S., *Retina embriyogenezi-fizyolojisi, muayene yöntemleri, retina dejeresanları*. 2 ed. Akova YA, Q'dwyer PA, editors. Ankara: Güneş tıp kitapçevleri. 2011: p. 513-25.
28. Apaydın C, Anotomi. Aydın P, YA. A, editors. Ankara: Güneş kitabevi. 2001: p. 3-25.
29. İlhan B, E.B., *Retina fizyolojisi. ret-vit*. 1998: p. 6:68-73.
30. Kozart DM, Anatomic Corralates of the Retina. T.D.D, editor. Philadelphia: *Clinical Ophthalmology. The Retina Glaucoma*. . 1981: p. 1-18.
31. Özçetin H, *Retina Hastalıkları*. H.Ö, editor. Bursa:Nobel Tıp Kitabevleri. 2003: p. 232-312.
32. Marmor MF, Structure, function, and disease of the retinal pigment epithelium. Marmor MF, TJ. W, editors. New York:Oxford University Press. 1998: p. 3-97.
33. McCaa C. S., The eye and visual nervous sistem:Anatomy, physiology and toxicology. *Environ Health Perspect*. 1982: p. 44: 1-8.
34. American Academy of Ophthalmology, Basic and Science Course,Section 12: Retina and Vitreus. 2008.
35. Edwards, R.B., et al., Synthesis of retinoic acid from retinol by cultured rabbit Muller cells. *Exp Eye Res*, 1992. 54.4: p. 481-90.
36. Provis, J.M., Development of the primate retinal vasculature. *Prog Retin Eye Res*, 2001. 20.6: p. 799-821.
37. Guyer DR, S.A., Green WR, , The choroid: structural considerations. In: Ryan SJ, Ogden TE, editors. *Retina*. Volume 1. St.Louis, Baltimore, Toronto: The C.V. Mosby Company. 1989. 17-31.
38. H, G., *Gray's Anatomy, 37th Edition*. Bannister. Williams Warwick Dyson. 1989. 1180-1207.
39. Fujiwara, T., et al., Enhanced depth imaging optical coherence tomography of the choroid in highly myopic eyes. *Am J Ophthalmol*, 2009. 148.4: p. 445-50.
40. Spaide, R.F., H. Koizumi, and M.C. Pozzoni, Enhanced depth imaging spectral-domain optical coherence tomography. *Am J Ophthalmol*, 2008. 146.4: p. 496-500.

41. Krumpaszky, H.G. and V. Klauss, [Cause of blindness in Bavaria. Evaluation of a representative sample from blindness compensation records of Upper Bavaria]. *Klin Monbl Augenheilkd*, 1992. 200.2: p. 142-6.
42. Alm A, Bill A. Ocular and optic nerve blood flow at normal and increased intraocular pressures in monkeys (*Macaca*): a study with radioactively labelled microspheres including flow determinations in brain and some other tissues. *Exp Eye Res*. 1973; 15: 15-29
43. Parver LM, Auker C, Carpenter DO. Choroidal blood flow as a heat dissipating mechanism in the macula. *Am J Ophthalmol*. 1980; 89: 641e6
44. Guyer D, S.A., Green W, The Choroid: Structural Considerations. *Retina* 4th Ed Philadelphia: Elsevier. 2006. 34-42.
45. CV, N., *Developmental Anatomy of the Retinal and Choroidal Vasculature. The Retina and Its Disorders*. 2011. 179.
46. LA, R., *Clinical anatomy of the visual system*. 3 rd ed: Elsevier. 2005.
47. Zorab RA, S.H., Dondrea CL, Arturo C, DuCharme N, Tanaka S *Fundamentals and Principles of Ophthalmology. Basic and Clinical Science Course. American Academy of Ophthalmology*. San Francisco. 2010. 2.
48. Nickla DL, Wallman J. The multifunctional choroid. *Prog Retin Eye Res* 2010 Mar; 29 (2): 144-68.
49. Ernest JT, Choroidal circulation. In: Ryan SJ, Ogden TE, editors. *Retina. Volume 1*. St.Louis, Baltimore, Toronto: The C.V. Mosby Company. 1989. 67.
50. Mrejen S, Spaide RF. Optical coherence tomography: imaging of the choroid and beyond. *Surv Ophthalmol* 2013 Sep-Oct; 58 .5: 387-429.
51. Harris A, Moss A, Ehrlich R. Chapter 22. The Choroid. *Duane's Ophthalmology CD ROM*. Tasman W, Jaeger EA. 2010 Edition, Philadelphia, Lipincott Williams and Wilkins Publishers. 2010.
52. Chalam KV, Ambati BK, Beaver HA, Grover S, Levine LM, Wells T, Isbey EK. *Fundamentals and Principles of Ophthalmology. Basic and Clinical Science Course. Section 2*. Singapore, American Academy of Ophthalmology. 64-66. 2011.
53. O, A.A.o., *Retina and vitreous*. San Francisco, Calif.: American Academy of Ophthalmology. 2007.
54. Yoneya, S. and M.O. Tso, *Angioarchitecture of the human choroid*. *Arch Ophthalmol*, 1987. 105.5: p. 681-7.
55. Wangsa-Wirawan, N.D. and R.A. Linsenmeier, *Retinal oxygen: fundamental and clinical aspects*. *Arch Ophthalmol*, 2003. 121.4: p. 547-57.
56. Wallman, J., et al., *Moving the retina: choroidal modulation of refractive state*. *Vision Res*, 1995. 35.1: p. 37-50.
57. Parver, L.M., *Temperature modulating action of choroidal blood flow*. *Eye (Lond)*, 1991. 5 ( Pt 2): p. 181-5.
58. Wallman J, Wildsoet C, Xu A, Gottlieb MD, Nickla DL, Marran L, Krebs W, Christensen AM. *Moving the retina: choroidal modulation of refracti-*

- ve state. *Vision Res* 1995 Jan; 35 .1: 37-50
59. Mrejen, S. and R.F. Spaide, Optical coherence tomography: imaging of the choroid and beyond. *Surv Ophthalmol*, 2013. 58.5: p. 387-429.
  60. Fraunfelder FT., Sciubba JJ., Mathers WD. The role of medications in causing dry eye. *J Ophthalmol* 2012;2012:285851. doi: 10.1155/2012/285851. Epub 2012 Aug 27.
  61. Schein OD, Hochberg MC, Muñoz B, Tielsch JM, Bandeen-Roche K, Provost T, Anhalt GJ, West S. Dry eye and dry mouth in the elderly: a population-based assessment. *Arch Intern Med*. 1999 Jun 28;159(12):1359-63. doi: 10.1001/archinte.159.12.1359.
  62. Paulsen AJ, Cruickshanks KJ, Fischer ME, Huang GH, Klein BE, Klein R, Dalton DS. Dry eye in the beaver dam offspring study: prevalence, risk factors, and health-related quality of life. *Am J Ophthalmol*. 2014 Apr;157(4):799-806. doi: 10.1016/j.ajo.2013.12.023. Epub 2014 Jan 2.
  63. Apostol S, Filip M, Dragne C, Filip A. Dry eye syndrome. Etiological and therapeutic aspects. *Oftalmologia*. 2003;59(4):28-31.
  64. Williams IM, Dickinson P, Sum AC. Edrophonium test in myasthenia: quantitative oculography. *Clin Exp Neurol*. 1986;22:1-12.
  65. Doroshow JH, Locker GY, Gaasterland DE, Hubbard SP, Young RC, Myers CE. Ocular irritation from high-dose methotrexate therapy: pharmacokinetics of drug in the tear film. *Cancer*. 1981 Nov 15;48(10):2158-62. doi: 10.1002/1097-0142(19811115)48:10<2158::aid-cncr2820481007>3.0.co;2-i.
  66. Düzgün E, Özkur E. The effect of oral isotretinoin therapy on meibomian gland morphology and dry eye tests. *J Dermatolog Treat*. 2022 Mar;33(2):762-768. doi: 10.1080/09546634.2020.1774041. Epub 2020 Jun 8.
  67. Raizman MB, Hamrah P, Holland EJ, Kim T, Mah FS, Rapuano CJ, Ulrich RG. Drug-induced corneal epithelial changes. *Surv Ophthalmol*. 2017 May-Jun;62(3):286-301. doi: 10.1016/j.survophthal.2016.11.008. Epub 2016 Nov 24.
  68. Konowal A, Morrison JC, Brown SV, Cooke DL, Maguire LJ, Verdier DV, Fraunfelder FT, Dennis RF, Epstein RJ. Irreversible corneal decompensation in patients treated with topical dorzolamide. *Am J Ophthalmol*. 1999 Apr;127(4):403-6. doi: 10.1016/s0002-9394(98)00438-3.
  69. Nik NA, Martin NF, Berler DK. Corneal crystalline deposits and drusenosis associated with IgA-kappa chain monoclonal gammopathy. *Am Ophthalmol* 1985;17:303-7.
  70. Winterbotham CT, Torczynski E, Horwitz AL, et al. Unusual mucopolysaccharide disorder with corneal and scleral involvement. *Am J Ophthalmol* 1990;109:544-55.
  71. Moshirfar M, Bennett P, Ronquillo Y. Corneal Dystrophy. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing, 2021. <http://www.ncbi.nlm.nih.gov/books/NBK557865/>
  72. Walter KA, Coulter VL, Palay DA, et al. Corneal endothelial deposits in

- patients with cytomegalovirus retinitis. *Am J Ophthalmol* 1996;121:391–6
73. D'Amico DJ, Kenyon KR. Drug-Induced lipidoses of the cornea and conjunctiva. *Int Ophthalmol* 1981;4:67–76.
  74. Shayman JA, Abe A. Drug induced phospholipidosis: an acquired lysosomal storage disorder. *Biochimica et Biophysica Acta (BBA) -Molecular and Cell Biology of Lipids* 2013;1831:602–11.
  75. Stein CA, LaRocca RV, Thomas R, et al. Suramin: an anticancer drug with a unique mechanism of action. *J Clin Oncol* 1989;7:499–508.
  76. Orlando RG, Dangel ME, Schaal SE. Clinical experience and grading of amiodarone keratopathy. *Ophthalmology*. 1984 Oct;91(10):1184-7. doi: 10.1016/s0161-6420(84)34165-3.
  77. Hollander DA, Aldave AJ. Drug-induced corneal complications. *Curr Opin Ophthalmol* 2004;15:541–8.
  78. Bernstein HN. Some iatrogenic ocular diseases from systemically administered drugs. *Int Ophthalmol Clin* 1970;10:553–619.
  79. Font RL, Sobol W, Matoba A. Polychromatic corneal and conjunctival crystals secondary to clofazimine therapy in a leper. *Ophthalmology* 1989;96:311–5.
  80. Fraunfelder FT, LaBraico JM, Meyer SM. Adverse ocular reactions possibly associated with isotretinoin. *Am J Ophthalmol* 1985;100:534–7.
  81. Lal S, Bloom D, Silver B, et al. Replacement of chlorpromazine with other neuroleptics: effect on abnormal skin pigmentation and ocular changes. *J Psychiatry Neurosci* 1993;18:173–7.
  82. Hollander DA, Aldave AJ. Drug-induced corneal complications. *Curr Opin Ophthalmol* 2004;15:541–8.
  83. Easterbrook M. Is corneal deposition of antimalarial any indication of retinal toxicity? *Can J Ophthalmol* 1990;25:249–51.
  84. Dosso A, Rungger-Brändle E. In vivo confocal microscopy in hydroxychloroquine-induced keratopathy. *Graefes Arch Clin Exp Ophthalmol* 2007;245:318–20.
  85. Nasveld PE, Edstein MD, Reid M, et al. Randomized, double-blind study of the safety, tolerability, and efficacy of tafenoquine versus mefloquine for malaria prophylaxis in nonimmune subjects. *Antimicrob Agents Chemother* 2010;54:792–8.
  86. Chia PL, John T. Vortex keratopathy presumed secondary to AZD9291. *J Thorac Oncol* 2015;10:1807–8.
  87. Stokkermans TJ, Goyal A, Bansal P, et al. Chloroquine And Hydroxychloroquine Toxicity. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing, 2021. <http://www.ncbi.nlm.nih.gov/books/NBK537086/>. (cited 2021 Aug 14). 18 Marmor MF, Carr RE, Easterbrook M, et al.
  88. Dosso A, Rungger-Brändle E. In vivo confocal microscopy in hydroxy-

- chloroquine induced keratopathy. *Graefes Arch Clin Exp Ophthalmol* 2007;245:318–20.
89. Ingram DV, Jaggarao NS, Chamberlain DA. Ocular changes resulting from therapy with amiodarone. *Br J Ophthalmol* 1982;66:676–9.
  90. Ghosh M, McCulloch C. Amiodarone-induced ultrastructural changes in human eyes. *Can J Ophthalmol* 1984;19:178–86.
  91. Ingram DV, Jaggarao NS, Chamberlain DA. Ocular changes resulting from therapy with amiodarone. *Br J Ophthalmol* 1982;66:676–9.
  92. Passman RS, Bennett CL, Purpura JM, et al. Amiodarone-associated optic neuropathy: a critical review. *Am J Med* 2012;125:447–53.25
  93. Vassallo P, Trohman RG. Prescribing amiodarone: an evidence-based review of clinical indications. *JAMA* 2007;298:1312–22.
  94. Joshi KM, Gill MK. Amiodarone: a potential risk factor for retinal phototoxicity. *Am J Ophthalmol Case Rep* 2017;5:119–23.
  95. Mäntyjärvi M, Tuppurainen K, Ikäheimo K. Ocular side effects of amiodarone. *Surv Ophthalmol* 1998;42:360–6.
  96. Holland EJ, Stein CA, Palestine AG, et al. Suramin keratopathy. *Am J Ophthalmol* 1988;106:216–20.
  97. Garcia-Schürmann JM, Schulze H, Haupt G, et al. Suramin treatment in hormone- and chemotherapy-refractory prostate cancer. *Urology* 1999;53:535–41.
  98. Teich SA, Handwerger S, Mathur-Wagh U, et al. Toxic keratopathy associated with suramin therapy. *N Engl J Med* 1986;314:1455–6.
  99. Stein CA, LaRocca RV, Thomas R, et al. Suramin: an anticancer drug with a unique mechanism of action. *J Clin Oncol* 1989;7:499–508.
  100. Tarafdar S, Lim LT, Collins CE, et al. Tamoxifen keratopathy as seen with in-vivo confocal microscopy. *Semin Ophthalmol* 2012;27:27–8.
  101. Nouredin BN, Seoud M, Bashshur Z, et al. Ocular toxicity in low-dose tamoxifen: a prospective study. *Eye* 1999;13:729–33.
  102. Nayfield SG, Gorin MB. Tamoxifen-associated eye disease. A review. *J Clin Oncol* 1996 ;14:1018–26. Mar.
  103. Molina-Ruiz AM, Pulpillo Águeda, Molina-Ruiz RM, et al. Chlorpromazine-induced severe skin pigmentation and corneal opacities in a patient with schizophrenia. *Int J Dermatol* 2016;55:909–12.
  104. Alexander LJ, Bowerman L, Thompson LR. The prevalence of the ocular side effects of chlorpromazine in the Tuscaloosa Veterans administration patient population. *J Am Optom Assoc* 1985;56:872–6.
  105. Greiner AC, Berry K. Skin pigmentation and corneal and lens opacities with prolonged chlorpromazine therapy. *Can Med Assoc J* 1964;90:663–5.
  106. Gokulgandhi MR, Vadlapudi AD, Mitra AK. Ocular toxicity from systemically administered xenobiotics. *Expert Opin Drug Metab Toxicol* 2012;8:1277–91.

107. Huff LS, Prado R, Pederson JF, et al. Chlorpromazine-induced skin pigmentation with corneal and lens opacities. *Cutis* 2014;93:247–50.
108. S K. Chlorpromazine-induced cataract and corneal pigmentation Indian Journal of Pharmacology 2004;36:323.
109. Hostetler KY, Richman DD. Studies on the mechanism of phospholipid storage induced by amantadine and chloroquine in Madin Darby canine kidney cells. *Biochem Pharmacol* 1982;31:3795–9.
110. Yoshinaka A, Chikama T, Kiuchi Y. Amantadine can induce intra-epithelial deposition in the cornea. *Am J Ophthalmol Case Rep* 2020;19:100852.
111. Yoshinaka A, Chikama T, Kiuchi Y. Amantadine can induce intra-epithelial deposition in the cornea. *Am J Ophthalmol Case Rep* 2020;19:100852.
112. Karbach U, Kricke J, Meyer-Wentrup F, et al. Localization of organic cation transporters OCT1 and OCT2 in rat kidney. *Am J Physiol Renal Physiol* 2000;279:F679–87.
113. Fitt A, Dayan M, Gillie RF. Vortex keratopathy associated with ibuprofen therapy. *Eye* 1996;10:145–6.
114. Bernstein HN. Some iatrogenic ocular diseases from systemically administered drugs. *Int Ophthalmol Clin* 1970;10:553–619.
115. Szmyd L, Perry HD. Keratopathy associated with the use of naproxen. *Am J Ophthalmol* 1985;99:598.
116. Fitt A, Dayan M, Gillie RF. Vortex keratopathy associated with ibuprofen therapy. *Eye* 1996;10:145–6.
117. Tillmann W, Keitel L. [Indomethacin induced corneal deposits (author's transl)]. *Klin Monbl Augenheilkd* 1977;170:756–9.
118. Bron AJ, McLendon BF, Camp AV. Epithelial deposition of gold in the cornea in patients receiving systemic therapy. *Am J Ophthalmol* 1979;88:354–60.
119. López JD, del Castillo JMB, López CD, et al. Confocal microscopy in ocular chrysiasis. *Cornea* 2003;22:573–5.
120. Paladini I, Menchini U, Mencucci R. Corneal chrysiasis: in vivo confocal microscopy analysis. *Eur J Ophthalmol* 2010 ;;20:776–9. Jul 1.
121. Blaschke TF, Skinner MH. The clinical pharmacokinetics of rifabutin. *Clin Infect Dis* 1996;22 Suppl 1:S15–22.
122. Smith JA, Mueller BU, Nussenblatt RB, et al. Corneal endothelial deposits in children positive for human immunodeficiency virus receiving rifabutin prophylaxis for *Mycobacterium avium* complex bacteremia. *Am J Ophthalmol* 1999;127:164–9.
123. Golchin B, McClellan K. Corneal endothelial deposits secondary to rifabutin prophylaxis for *Mycobacterium avium* complex bacteraemia. *Br J Ophthalmol* 2003;87:798–9
124. Zhang T, Sun CQ, Lin YB, et al. Rifabutin corneal deposits localized to the deep stroma using anterior segment optical coherence tomography. *Am J*

- Ophthalmol Case Rep 2020;18:100701.
125. Dorell L., Ellerton C., Cottrell DG., et al. Toxicity of Clarithromycin in the treatment of Mycobacterium avium complex infection in a patient with AIDS. *J Antimicrob Chemother* 1994;34:605–6.
  126. Wälinder PE, Gip L, Stempa M. Corneal changes in patients treated with clofazimine. *Br J Ophthalmol* 1976;60:526–8
  127. Kaur I, Ram J, Kumar B, et al. Effect of clofazimine on eye in multibacillary leprosy. *Indian J Lepr* 1990;62:87–90.
  128. Barot RK, Viswanath V, Pattiwar MS, et al. Crystalline deposition in the cornea and conjunctiva secondary to long-term clofazimine therapy in a leprosy patient. *Indian J Ophthalmol* 2011;59:328–9.
  129. Ahn J, Wee WR, Lee JH, et al. Vortex keratopathy in a patient receiving vandetanib for non-small cell lung cancer. *Korean J Ophthalmol* 2011;25:355–7.
  130. Arriola-Villalobos P, Benito-Pascual B, Díaz-Valle D, et al. Confocal microscopy observation of cornea verticillata after vandetanib therapy for medullary thyroid carcinoma. *Cornea* 2018;37:789–92.
  131. Nakamura Y, Sotozono C, Kinoshita S. The epidermal growth factor receptor (EGFR): role in corneal wound healing and homeostasis. *Exp Eye Res* 2001;72:511–7.
  132. Yeh S, Fine HA, Smith JA. Corneal verticillata after dual anti-epidermal growth factor receptor and anti-vascular endothelial growth factor receptor 2 therapy (vandetanib) for anaplastic astrocytoma. *Cornea* 2009;28:699–702.
  133. Chia PL, John T. Vortex keratopathy presumed secondary to AZD9291. *J Thorac Oncol* 2015;10:1807–8.
  134. Ritch PS, Hansen RM, Heuer DK. Ocular toxicity from high-dose cytosine arabinoside. *Cancer* 1983;51:430–2.
  135. Guthoff T, Tietze B, Meinhardt B, et al. Cytosine-arabinside- Induced eratothy: a model of corneal proliferation kinetics. *Ophthalmologica* 2010;224:308–11.
  136. Crema H, Santiago RA, Schuh A, et al. Cytarabine toxicity of the corneal endothelium. *Ann Hematol* 2013;92:559–60.
  137. Özcan G, Uçakhan ÖÖ. Cytarabine-induced corneal toxicity: clinical features and relief of symptoms with loteprednol etabonate 0.5% in two patients. *Turk J Ophthalmol* 2021;51:114–7.
  138. Lochhead J, Salmon JF, Bron AJ. Cytarabine-induced corneal toxicity. *Eye* 2003;17:677–8
  139. Eaton JS, Miller PE, Mannis MJ, et al. Ocular adverse events associated with antibody-drug conjugates in human clinical trials. *J Ocul Pharmacol Ther* 2015;31:589–604.
  140. Beeram M, Krop IE, Burris HA, et al. A phase 1 study of weekly dosing of trastuzumab emtansine (T-DM1) in patients with advanced human epi-

- dermal growth factor 2-positive breast cancer. *Cancer* 2012;118:5733–40.
141. Curtis R, Rullo J. Severe bilateral conjunctivitis with corneal limbal infiltrates associated with Dupilumab treatment. *JAMA Ophthalmol* 2021;139:e212012.
142. Lonial S, Nooka AK, Thulasi P, et al. Management of belantamab mafodotin-associated corneal events in patients with relapsed or refractory multiple myeloma (RRMM). *Blood Cancer J* 2021;11:103.
143. Eaton JS, Miller PE, Mannis MJ, et al. Ocular adverse events associated with antibody-drug conjugates in human clinical trials. *J Ocul Pharmacol Ther* 2015;31:589–604.
144. Frings A, Schargus M. Recovery from amiodarone-induced cornea verticillata by application of topical heparin. *Cornea* 2017;36:1419–22.
145. Bernstein HN. Some iatrogenic ocular diseases from systemically administered drugs. *Int Ophthalmol Clin* 1970;10:553–619.
146. Tripathi RC, Tripathi BJ. The eye. In: Riddell R, editor. *Pathology of drug-induced and toxic diseases*. New York (NY): Churchill Livingstone, 1982: 377-456
147. Li, J., Tripathi, R. C., & Tripathi, B. J. (2008). Drug-Induced Ocular Disorders. *Drug Safety*, 31(2), 127–141. doi:10.2165/00002018-200831020-00003
148. Cekic O, Chang S, Tseng JJ, et al. Cataract progression after intravitreal triamcinolone injection. *Am J Ophthalmol* 2005; 139: 993-8
149. Fraunfelder FT, Fraunfelder FW. *Drug-induced ocular side effects*. Boston (MA): Butterworth-Heinemann, 2001.
150. Bron AJ, Tripathi RC, Tripathi BJ. *Wolff's anatomy of the eye and orbit*. London (UK): Chapman and Hall, 1997
151. Grimes P, von Sallmann L, Frichette A. Influence of Myleran on associell proliferation in the lens epithelium. *Invest Ophthalmol* 1964; 3: 566-76
152. Dibas A, Jiang M, Fudala R, et al. Fluorescent protein-labeled glucocorticoid receptor alpha isoform trafficking in cultured human trabecular meshwork cells. *Invest Ophthalmol Vis Sci*. 2012;53(6):2938e50
153. Lewis-Tuffin LJ, Cidlowski JA. The physiology of human glucocorticoid receptor beta (hGRbeta) and glucocorticoid resistance. *Ann N Y Acad Sci*. 2006;1069:1e9
154. Galon J, Franchimont D, Hiroi N, et al. Gene profiling reveals unknown enhancing and suppressive actions of glucocorticoids on immune cells. *FASEB J*. 2002;16(1):61e71
155. Fingert JH, Ying L, Swiderski RE, et al. Characterization and comparison of the human and mouse *GLC1A* glaucoma genes. *Genome Res*. 1998;8:377e84
156. Patel GC, Phan TN, Maddineni P, et al. Dexamethasone-induced ocular hypertension in mice: effects of myocilin and route of administration. *Am*

- J Pathol. 2017;187(4):713e23
157. Fan BJ, Wang DY, Tham CC, et al. Gene expression profiles of human trabecular meshwork cells induced by triamcinolone and dexamethasone. *Invest Ophthalmol Vis Sci.* 2008;49(5):1886e97
  158. Lo WR, Rowlette LL, Caballero M, et al. Tissue differential microarray analysis of dexamethasone induction reveals potential mechanisms of steroid glaucoma. *Invest Ophthalmol Vis Sci.* 2003;44(2):473e85.
  159. Rozsa FW, Reed DM. Gene expression profile of human trabecular meshwork cells in response to long-term dexamethasone exposure. *Mol Vis.* 2006;12:125e41.
  160. Clark AF, Wilson K, de Kater AW, et al. Dexamethasone-induced ocular hypertension in perfusion-cultured human eyes. *Invest Ophthalmol Vis Sci.* 1995;36:478e89
  161. Clark AF, Wordinger RJ. The role of steroids in outflow resistance. *Exp Eye Res.* 2009;88:752e9.
  162. Shirato S, Murphy CG. Kinetics of phagocytosis in trabecular meshwork cells. Flow cytometry and morphometry. *Invest Ophthalmol Vis Sci.* 1989;30(12):2499e511.
  163. Kasetti RB, Maddineni P, Patel PD, et al. Transforming growth factor  $\beta$ 2 (TGF $\beta$ 2) signaling plays a key role in glucocorticoid-induced ocular hypertension. *J Biol Chem.* 2018;293(25):9854e68.
  164. Wilson K, McCartney MD, Miggans ST, Clark AF. Dexamethasone induced ultrastructural changes in cultured human trabecular meshwork cells. *Curr Eye Res.* 1993;12(9):783e93
  165. Clark AF, Wilson K. Glucocorticoid-induced formation of cross-linked actin networks in cultured human trabecular meshwork cells. *Invest Ophthalmol Vis Sci.* 1994;35(1):281e94.
  166. Clark AF, Miggans ST, Wilson K, et al. Cytoskeletal changes in cultured human glaucoma trabecular meshwork cells. *J Glaucoma.* 1995;4(3):183e8
  167. Cohen A. Steroid Induced Glaucoma, Glaucoma - Basic and Clinical Concepts, Dr Shimon Rumelt. InTech, London, UK; 2011. ISBN: 978-953-307-591-4.
  168. Armaly MF, Becker B. Intraocular pressure response to topical corticosteroids. *Fed Proc.* 1965;24(6):1274e8.
  169. Armaly MF. Effect of corticosteroids on intraocular pressure and fluid dynamics: II. The effect of dexamethasone on the glaucomatous eye. *Arch Ophthalmol.* 1963;70:492e9
  170. Gupta S, Shah P, Grewal S, et al. Steroid-induced glaucoma and childhood blindness. *Br J Ophthalmol.* 2015;99(11):1454e6
  171. Senthil S, Thakur M, Rao HL, et al. Steroid-induced glaucoma and blindness in vernal keratoconjunctivitis. *Br J Ophthalmol.* 2020;104(2):265e9
  172. Zhang X, Clark AF, Yorio T. Regulation of glucocorticoid responsiveness in glaucomatous trabecular meshwork cells by glucocorticoid recep-

- tor-beta. *Invest Ophthalmol Vis Sci.* 2005;46(12):4607e16.
173. Zhang X, Ognibene CM, Clark AF, Yorio T. Dexamethasone inhibition of trabecular meshwork cell phagocytosis and its modulation by glucocorticoid receptor beta. *Exp Eye Res.* 2007;84(2):275e84.
174. Patel GC, Liu Y, Millar JC, Clark AF. Glucocorticoid receptor GR $\beta$  regulates glucocorticoid-induced ocular hypertension in mice. *Sci Rep.* 2018;8(1):862.
175. Garbe E, LeLorier J, Boivin JF, Suissa S. Risk of ocular hypertension or open-angle glaucoma in elderly patients on oral glucocorticoids. *Lancet.* 1997;350(9083):979e82.
176. Biedner BZ, David R, Grudsky A, Sachs U. Intraocular pressure response to corticosteroids in children. *Br J Ophthalmol.* 1980;64:430e1.
177. Hutcheson KA. Steroid-induced glaucoma in an infant. *J AAPOS.* 2007;11:522e3
178. Lam DS, Kwok AK, Chew S. Accelerated ocular hypertensive response to topical steroids in children. *Br J Ophthalmol.* 1997;81:422e3.
179. Gaston H, Absolon MJ, Thurtle OA, Sattar MA. Steroid responsiveness in connective tissue diseases. *Br J Ophthalmol.* 1983;67(7):487e90.
180. Podos SM, Becker B, Morton WR. High myopia and primary open-angle glaucoma. *Am J Ophthalmol.* 1966;62(6):1038e43.
181. Becker B, Bresnick G, Chevrette L, et al. Intraocular pressure and its response to topical corticosteroids in diabetes. *Arch Ophthalmol.* 1966;76(4):477e83.
182. Spaeth GL. Traumatic hyphema, angle recession, dexamethasone hypertension, and glaucoma. *Arch Ophthalmol.* 1967;78(6):714e21.
183. Razeghinejad MR, Katz LJ. Steroid-induced iatrogenic glaucoma. *Ophthalmic Res.* 2012;47(2):66e80.
184. Bower T, Samek DA, Mohammed A, et al. Systemic medication usage in glaucoma patients. *Can J Ophthalmol.* 2018;53(3):242e5.
185. Adhikary HP, Sells RA, Basu PK. Ocular complications of systemic steroid after renal transplantation and their association with HLA. *Br J Ophthalmol.* 1982;66(5):290e1.
186. Garbe E, LeLorier J, Boivin JF, Suissa S. Risk of ocular hypertension or open-angle glaucoma in elderly patients on oral glucocorticoids. *Lancet.* 1997;350(9083):979e82.
187. Tripathi RC, Kirschner BS, Kipp M, et al. Corticosteroid treatment for inflammatory bowel disease in pediatric patients increases intraocular pressure. *Gastroenterology.* 1992;102(6):1957e61.
188. Acar M, Gedizlioglu M, Koskderelioglu A, et al. Effect of highdose intravenous methyl-prednisolone treatment on intraocular pressure in multiple sclerosis patients with relapse. *Eur Neurol.* 2012;68(1):20e2.
189. Gupta SR, Suhler EB, Rosenbaum JT. Intravenous methylprednisolone can cause an acute, vision-threatening rise in intraocular pressure. *J Clin*

- Rheumatol. 2010;16(8):397e8
190. Kiddee W, Trope GE, Sheng L, et al. Intraocular pressure monitoring post intravitreal steroids: a systematic review. *Surv Ophthalmol.* 2013;58(4):291e310.
  191. Sihota R, Konkal VL, Dada T, et al. Prospective, long-term evaluation of steroid-induced glaucoma. *Eye (Lond).* 2008;22:26e30.
  192. Phulke S, Kaushik S, Kaur S, Pandav SS. Steroid-induced glaucoma: an avoidable irreversible blindness. *J Curr Glaucoma Pract.* 2017;11(2):67e72.
  193. Schwartz JT, Reuling FH, Feinleib M, et al. Twin study on ocular pressure following topically applied dexamethasone. II. Inheritance of variation in pressure response. *Arch Ophthalmol.* 1973;90(4):281e6.
  194. Galin MA, Hirschman H, Gould H, Hofmann I. Does laser trabeculoplasty prevent steroid glaucoma? *Ophthalmic Surg Lasers.* 2000;31(2):107e10.
  195. Gerometta R, Spiga MG, Borra' s T, Candia OA. Treatment of sheep steroid-induced ocular hypertension with a glucocorticoid-inducible MMP1 gene therapy virus. *Invest Ophthalmol Vis Sci.* 2010;51(6):3042e8.
  196. Fraunfelder FW, Rosenbaum JT. Drug-induced uveitis. Incidence, prevention and treatment. *Drug Saf* 1997;17:197-207.
  197. London NJ, Garg SJ, Moorthy RS, Cunningham ET. Drug-induced uveitis. *J Ophthalmic Inflamm Infect* 2013;3:43-60.
  198. Moorthy RS, Moorthy MS, Cunningham ET. Drug-induced uveitis. *Curr Opin Ophthalmol* 2018;29:588-603.
  199. Cordero-Coma M, Salazar-Mendez R, Garzo-Garc I, Yilmaz T. Drug-induced uveitis. *Expert Opin Drug Saf* 2015;14:111-26.
  200. Koneru PB, Lien EJ, Koda RT. 31. Oculotoxicities of systemically administered drugs. *J Ocul Pharmacol* 1986;2:385-404.
  201. Mader R, Narendran A, Lewtas J, Bykerk V, Goodman RC, Dickson JR, et al. Systemic vasculitis following influenza vaccination-report of 3 cases and literature review. *J Rheumatol* 1993;20:1429-31. 8.
  202. Worledge S. Hong Kong treatment services-royal postgraduate medical school-british medical research council co-operative study of rifampicin plus ethambutol in daily and intermittent regimens. The detection of rifampicin-dependent antibodies. *Scand J Respir Dis* 1973;84:60-3.
  203. Jacobs DS, Piliero PJ, Kuperwaser MG, Smith JA, Harris SD, Flanigan TP, et al. Acute uveitis associated with rifabutin use in patients with human immunodeficiency virus infection. *Am J Ophthalmol* 1994;118:716-22.
  204. Shafraan SD, Deschènes J, Miller M, Phillips P, Toma E. Uveitis and pseudojaundice during a regimen of clarithromycin, rifabutin, and ethambutol. MAC Study Group of the Canadian HIV Trials Network. *N Engl J Med* 1994;330:438-9.
  205. D'Amato RJ, Alexander GM, Schwartzman RJ, Kitt CA, Price DL, Synder SH. Evidence for neuromelanin involvement in MPTP- induced neuro-

- toxicity. *Nature* 1987;327:324-6.
206. Ings RM. The melanin binding of drugs and its implications. *Drug Metab Rev* 1984;15:1183-212.
207. Salazar-Bookaman MM, Wainer I, Patil PN. Relevance of drug-melanin interactions to ocular pharmacology and toxicology. *J Ocul Pharmacol* 1994;10:217-39.
208. Broekhuysen RM, Kuhlmann ED, Winkens HJ. Experimental autoimmune anterior uveitis (EAAU). III. Induction by immunization with purified uveal and skin melanins. *Exp Eye Res* 1993;56:575-83.
209. Martins JC, Wilensky JT, Asseff CF, Obstbaum SA, Buerk KM. Corticosteroid-induced uveitis. *Am J Ophthalmol* 1974;77:433-7.
210. Hargardon KM, Johnson CE, Williams CJ. Immune checkpoint blockade therapy for cancer: An overview of FDA approved immune checkpoint inhibitors. *Int Immunopharmacol* 2018;62:29-39.
211. Ehlers S. Why does tumor necrosis factor targeted therapy reactivate tuberculosis? *J Rheumatol Suppl* 2005;74:35-39.
212. Naranjo CA, Busto U, Sellers EM, Sandor P, Ruiz I, Roberts EA, et al. A method for estimating the probability of adverse drug reactions. *Clin Pharmacol Ther* 1981;30:239-45.
213. Holloway K, Green T. Drug and Therapeutics Committees: A Practical Guide. WHO Department of Essential Drugs and Medicines Policy, Geneva, Switzerland; 2003. Available from: <http://apps.who.int/medicinedocs/pdf/s4882e/s4882e.pdf>. [Last accessed on Feb 2020]
214. Davis JL, Taskintuna I, Freeman WR, Weinberg DV, Feuer WJ, Leonard RE. Iritis and hypotony after treatment with intravenous cidofovir for cytomegalovirus retinitis. *Arch Ophthalmol* 1997;115:733-7.
215. Saran BR, Maguire AM, Nichols C, Frank I, Hertle RW, Brucker AJ, et al. Hypopyon uveitis in patients with acquired immunodeficiency syndrome treated for systemic *Mycobacterium avium* complex infection with rifabutin. *Arch Ophthalmol* 1994;112:1159-65.
216. Shafran SD, Singer J, Zarowny DP, Deschenes J, Phillips P, Turgeon F, et al. Determinants of rifabutin-associated uveitis in patients treated with rifabutin, clarithromycin, and ethambutol for *Mycobacterium avium* complex bacteremia: A multivariate analysis. Canadian HIV Trials Network Protocol 010 Study Group. *J Infect Dis* 1998;177:252-5.
217. Sauty A, Pecherstorfer M, Zimmer-Roth I, Floroni P, Juillerat L, Markert M, et al. Interleukin-6 and tumor necrosis factor alpha levels after bisphosphonates treatment in vitro and in patients with malignancy. *Bone* 1996;18:133-9.
218. Fraunfelder FW, Fraunfelder FT. Bisphosphonates and ocular inflammation. *N Engl J Med* 2003;348:1187-8.
219. Kristinsson JK, Hannesson OB, Sveinsson O, Thorleifsson H. Bilateral anterior uveitis and retinal haemorrhages after administration of trimet-

- hoprim. *Acta Ophthalmol Scand* 1997;75:314-5.
220. Arola O, Peltonen R, Rossi T. Arthritis, uveitis, and Stevens-Johnson syndrome induced by trimethoprim. *Lancet* 1998;351:1102.
221. Okafor LO, Hewins P, Murray PI, Denniston AK. Tubulointerstitial nephritis and uveitis (TINU) syndrome: A systematic review of its epidemiology, demography and risk factors. *Orphanet J Rare Dis* 2017;12:128.
222. Mandeville JT, Levinson RD, Holland GN. The tubulointerstitial nephritis and uveitis syndrome. *Surv Ophthalmol* 2001;46:195-208.
223. Li C, Su T, Chu R, Li X, Yang L. Tubulointerstitial nephritis with uveitis in Chinese adults. *Clin J Am Soc Nephrol* 2014;9:21-8.
224. Gaujoux-Viala C, Giampietro C, Gaujoux T, Ea HK, Prati C, Orcel P, et al. Scleritis: A paradoxical effect of etanercept? Etanercept-associated inflammatory eye disease. *J Rheumatol* 2012;39:233-9.
225. Ramos-Casals M, Perez-Alvarez R, Diaz-Lagares C, Caudorado MJ, Khamashta MA. BIOGEAS Study Group. Autoimmune diseases induced by biological agents: A double-edged sword? *Autoimmun Rev* 2010;9:188-93.
226. Ramos-Casals M, Brito-Zeron P, Soto MJ, Caudorado MJ, Khamashta MA. Autoimmune diseases induced by TNF-targeted therapies. *Best Pract Res Clin Rheumatol* 2008;22:847-61.
227. Seve P, Varron L, Broussolle C, Dennis P, Kodjikian L. Sarcoid-related uveitis occurring during adalimumab therapy. *Ocul Immunol Inflamm* 2012;20:59-60.
228. Taylor HR, Murphy RP, Newland HS, White AT, D'Anna SA, Keyvan Larijani E, et al. Treatment of onchocerciasis. The ocular effects of ivermectin and diethylcarbamazine. *Arch Ophthalmol* 1986;104:863-7.
229. Francis H, Awadzi K, Ottesen EA. The Mazzotti reaction following treatment of onchocerciasis with diethylcarbamazine: Clinical severity as a function of infection intensity. *Am J Trop Med Hyg* 1985;34:529-36.
230. Bird AC, El-Sheikh H, Anderson J, Fuglsang H. Changes in visual function and in the posterior segment of the eye during treatment of onchocerciasis with diethylcarbamazine citrate. *Br J Ophthalmol* 1980;64:191-200.
231. Sankar PS, Pasquale LR, Grosskreutz CL. Uveal effusion and secondary angle-closure glaucoma associated with topiramate use. *Arch Ophthalmol* 2001;119:1210-1.
232. Dhar SK, Sharma V, Kapoor G, Seshadari KP, Chauhan VS. Topiramate induced bilateral anterior uveitis with choroidal detachment and angle closure glaucoma. *Med J Armed Forces India* 2015;71:88-91.
233. Eadie B, Etminan M, Mikelberg FS. Risk of uveitis with oral moxifloxacin: A comparative safety study. *JAMA Ophthalmol* 2015;133:81-4.
234. Willermain F, Deflorenne C, Bouffieux C, Janssens X, Koch P, Caspers L. Uveitis-like syndrome and iris transillumination after the use of oral moxifloxacin. *Eye (Lond)* 2010;24:1419.
235. Sandhu HS, Brucker AJ, Ma L, Vander Beek BL. Oral fluoroquinolones

- and the risk of uveitis. *JAMA Ophthalmol* 2016;134:38-43.
236. Conrady CD, Larochelle M, Pecan P, Palestine A, Shakoore A, Singh A. Checkpoint inhibitor-induced uveitis: A case series. *Graefes Arch Clin Exp Ophthalmol* 2018;256:187-91.
  237. Dalvin LA, Shields CL, Orloff M, Sato T, Shields JA. Checkpoint inhibitor immune && therapy: Systemic indications and ophthalmic side effects. *Retina* 2018;38:1063-78.
  238. Arai T, Harada K, Usui Y, Irisawa R, Tsuboi R. Case of acute anterior uveitis and Vogt-Koyanagi-Harada syndrome-like eruptions induced by nivolumab in a melanoma patient. *J Dermatol* 2017;44:975-6.
  239. Matsuo T, Yamasaki O. Vogt-Koyanagi-Harada disease-like posterior uveitis in the course of nivolumab (anti-PD-1 antibody), interposed by vemurafenib (BRAF inhibitor), for metastatic cutaneous malignant melanoma. *Clin Case Rep* 2017;5:694-700.
  240. Fujimura T, Kambayashi Y, Tanita K, Sato Y, Hidaka T, Otsuka A, et al. HLA-DRB1\*04:05 in two cases of Vogt-Koyanagi-Harada disease-like uveitis developing from an advanced melanoma patient treated by sequential administration of nivolumab and dabrafenib/trametinib therapy. *J Dermatol* 2018;45:735-7.
  241. Bricout M, Petre A, Amini-Adle M, Bezza W, Seve P, Kodjikian L, et al. Vogt-Koyanagi-Harada-like syndrome complicating pembrolizumab treatment for metastatic melanoma. *J Immunother* 2017;40:77-82.
  242. Nguyen M, Islam M, Lim S, Sahu A, Tamjid B. Pembrolizumab induced ocular hypotony with near complete vision loss, interstitial pulmonary fibrosis and arthritis. *Front Oncol* 2019;9:944.
  243. Choe CH, McArthur GA, Caro I, Kempen JH, Amravadi RK. Ocular toxicity in BRAF mutant cutaneous melanoma patients treated with vemurafenib. *Am J Ophthalmol* 2014;158:831-7.
  244. Guedj M, Queant A, Funck-Brentano E, Kramkimel N, Lellouch J, Monnet D, et al. Uveitis in patients with late-stage cutaneous melanoma treated with vemurafenib. *JAMA Ophthalmol* 2014;132:1421-5.
  245. Joshi L, Karydis A, Gemenetzi M, Shao EH, Taylor SR. Uveitis as a result of MAP kinase pathway inhibition. *Case Rep Ophthalmol* 2013;4:279-82.
  246. Kuniyoshi K, Hatsukawa Y, Kimura S, Fujino T, Ohguro H, Nakai R, et al. Acute bilateral photoreceptor degeneration in an infant after vaccination against measles and rubella. *JAMA Ophthalmol* 2017;135:478-82.
  247. Benage M, Fraunfelder FW. Vaccine-associated uveitis. *Mo Med* 2016;113:48-52.
  248. Kuniyoshi K, Hatsukawa Y, Kimura S, Fujino T, Ohguro H, Nakai R, et al. Acute bilateral photoreceptor degeneration in an infant after vaccination against measles and rubella. *JAMA Ophthalmol* 2017;135:478-82. Benage M, Fraunfelder FW. Vaccine-associated uveitis. *Mo Med* 2016;113:48-52.
  249. Cunningham ET, Moorthy RS, Fraunfelder FW, Zierhut M. Vaccine-associated uveitis. *Mo Med* 2016;113:48-52.

- s s o c i a t e d u v e i t i s . O c u l I m m u n o l I n f l a m m 2019;27:517-20.
250. Willis ED, Woodward M, Brown E, Popmihajlov Z, Saddier P, Annunziato PW, et al. Herpes zoster vaccine live: A 10 year review of post-marketing safety experience. *Vaccine* 2017;35:7231-9.
  251. Guex-Crosier Y, Chamot L, Zografos L. Chorioretinitis induced by intravesical Bacillus Calmette-Guérin (BCG) instillations for urinary bladder carcinoma. *Klin Monatsbl Augenheilkd* 2003;220:193-5.
  252. Llorenç V, Mesquida M, Molins B, González-Martín J, Sainz de la Maza M, Adán A. Bacillus calmette-guérin infection and cytotoxicity in the retinal pigment epithelium. *Ocul Immunol Inflamm* 2018;26:786-92.
  253. Knopf HL. Recurrent uveitis after influenza vaccination. *Ann Ophthalmol* 1991;23:213-4.
  254. Escott S, Tarabishy AB, Davidorf FH. Multifocal choroiditis following simultaneous hepatitis A, typhoid, and yellow fever vaccination. *Clin Ophthalmol Auckl NZ* 2013;7:363-5.
  255. Stangos A, Zaninetti M, Petropoulos I, Baglivo E, Pournaras C. Multiple evanescent white dot syndrome following simultaneous hepatitis-A and yellow fever vaccination. *Ocul Immunol Inflamm* 2006;14:301-4.
  256. Garip A, Diedrichs-Möhring M, Thurau SR, Deeg CA, Wildner G. Uveitis in a patient treated with Bacille-Calmette-Guérin: Possible antigenic mimicry of mycobacterial and retinal antigens. *Ophthalmology* 2009;116:2457-62.
  257. Fraunfelder FW, Suhler EB, Fraunfelder FT. Hepatitis B vaccine and uveitis: An emerging hypothesis suggested by review of 32 case reports. *Cutan Ocul Toxicol* 2010;29:26-9. 76. Fried M, Conen D, Conzelmann M, Steinemann E. Uveitis after hepatitis B vaccination. *Lancet Lond Engl* 1987;2:631-2.
  258. Sood AB, O'Keefe G, Bui D, Jain N. Vogt-Koyanagi-Harada disease associated with hepatitis B vaccination. *Ocul Immunol Inflamm* 2019;27:524-7.
  259. Erguven M, Guven S, Akyuz U, Bilgiç O, Laloglu F. Optic neuritis following hepatitis B vaccination in a 9-year-old girl. *J Chin Med Assoc JCMSA* 2009;72:594-7.
  260. Holt HD, Hinkle DM, Falk NS, Fraunfelder FT, Fraunfelder FW. Human papilloma virus vaccine associated uveitis. *Curr Drug Saf* 2014;9:65-8.
  261. Khalifa YM, Monahan PM, Acharya NR. Ampiginous choroiditis following quadrivalent human papilloma virus vaccine. *Br J Ophthalmol* 2010;94:137-9.
  262. Sawai T, Shimizu M, Sakai T, Yachie A. Tubulointerstitial nephritis and uveitis syndrome associated with human papillomavirus vaccine. *J Pediatr Ophthalmol Strabismus* 2016;53:190-1914.
  263. Gonome T, Suzuki Y, Metoki T, Takahashi S, Nakazawa M. Acute posterior multifocal placoid pigment epitheliopathy and granulomatous uveitis

- following influenza vaccination. *Am J Ophthalmol Case Rep* 2016;4:60-3.
264. Mendrinos E, Baglivo E. Acute posterior multifocal placoid pigment epitheliopathy following influenza vaccination. *Eye Lond Engl* 2010;24:180-1.
265. Abou-Samra A, Tarabishy AB. Multiple evanescent white dot syndrome following intradermal influenza vaccination. *Ocul Immunol Inflamm* 2019;27:528-30.
266. Blanche P, Decrette C, Sicard D. Development of uveitis following vaccination for influenza. *Clin Infect Dis Off Publ Infect Dis Soc Am* 1994;19:979.
267. Wells MB, Garg S. Bilateral panuveitis after influenza vaccination. *Retin Cases Brief Rep* 2009;3:386-87.
268. Tao Y, Chang L-B, Zhao M, Li X-X. Two cases of exudative retinal detachment and uveitis following H1N1 influenza vaccination. *Chin Med J (Engl)* 2011;124:3838-40.
269. Kim M. Vogt-Koyanagi-Harada syndrome following influenza vaccination. *Indian J Ophthalmol* 2016;64:98.
270. Manusow JS, Rai A, Yeh S, Mandelcorn ED. Two cases of panuveitis with orbital inflammatory syndrome after influenza vaccination. *Can J Ophthalmol* 2015;50:e71-4.
271. Williams GS, Evans S, Yeo D, Al-bermani A. Retinal artery vasculitis secondary to administration of influenza vaccine. *BMJ Case Rep* 2015;2015:bcr2015211971.
272. Blumberg S, Bienfang D, Kantrowitz FG. A possible association between influenza vaccination and small-vessel vasculitis. *Arch Intern Med* 1980;140:847-8.
273. Knopf HL. Recurrent uveitis after influenza vaccination. *Ann Ophthalmol* 1991;23:213-4.
274. Parafita-Fernández A, Parafita MA. Bilateral iritis after vaccine for bladder cancer. *Optom Vis Sci Off Publ Am Acad Optom* 2015;92:e368-70.
275. Jacob M, Gambrelle J, Fleury J, Durieu I, Kodjikian L, Duquesne N, et al. [Panuveitis following intravesical bacille Calmette-Guerin therapy]. *J Fr Ophtalmol* 2006;29:552-5.
276. Hegde V, Dean F. Bilateral panuveitis and optic neuritis following Bacillus Calmette-Guérin (BCG) vaccination. *Acta Paediatr Oslo Nor* 1992 2005;94:635-6.
277. Uppal GS, Shah AN, Tossounis CM, Tappin MJ. Bilateral panuveitis following intravesical BCG immunotherapy for bladder carcinoma. *Ocul Immunol Inflamm* 2010;18:292-6.
278. Sedaghat M, Zarei-Ghanavati S, Shokoohi S, Ghasemi A. Panuveitis and dermal vasculitis following MMR vaccination. *East Mediterr Health J* 2007;13:470-4.
279. Ferrini W, Aubert V, Balmer A, Munier FL, Abouzeid H. Anterior uveitis and cataract after rubella vaccination: A case report of a 12-month-old

- girl. *Pediatrics* 2013;132:e1035-8.
280. Suzuki J, Goto H, Komase K, Abo H, Fujii K, Otsuki N, et al. Rubella virus as a possible etiological agent of Fuchs heterochromic iridocyclitis. *Graefes Arch Clin Exp Ophthalmol* 2010;24:1487-91.
281. Hwang CW Jr, Steigleman WA, Saucedo-Sanchez E, Tuli SS. Reactivation of herpes zoster keratitis in an adult after varicella zoster vaccination. *Cornea* 2013;32:508-9.
282. Santana-Cabrera L, Fernandez-Tagarro EJ, Amo-Nolasco B, et al. Unilateral mydriasis secondary to ipratropium bromide in a critically ill patient. *J Emerg Trauma Shock* 2012; 5:199-200.
283. Hannon B, Jennings V, Twomey M, O'Reilly M. Transdermal hyoscine induced unilateral mydriasis. *BMJ Case Rep* 2012; 2012:pii:bcr0820114697.
284. Lee DT, Jenkins NL, Anastasopoulos AJ, et al. Transdermal scopolamine and perioperative anisocoria in craniofacial surgery: a report of 3 patients. *J Craniofac Surg* 2013; 24:470-472.
285. Polomsky M, Smereck J. Unilateral mydriasis due to hemorrhoidal ointment. *J Emerg Med* 2014; 43:e11-e15.
286. Cheng KL, Chan YC, Mak TW, et al. Chinese herbal medicine-induced anticholinergic poisoning in Hong Kong. *Hong Kong Med J* 2013; 19:38-41.
287. Matouskova O, Slanar O, Chytil L, Perlik F. Pupillometry in healthy volunteers as a biomarker of tramadol efficacy. *J Clin Pharm Ther* 2011; 36:513-517.
288. Wirostko BM, Tressler C, Hwang LF, et al. Ocular safety of sildenafil citrate when administered chronically for pulmonary arterial hypertension: results from phase III, randomized, double masked, placebo controlled trial and open label extension. *BMJ* 2012; 344:e554.
289. Oishi A, Miyamoto K, Kashii S, Yoshimura N. Photopsia as a manifestation of digitalis toxicity. *Can J Ophthalmol* 2006; 41:603-604.
290. Butler VP Jr, Odel JG, Rath E, et al. Digitalis-induced visual disturbances with therapeutic serum digitalis concentrations. *Ann Intern Med* 1995; 123:676-680.
291. Poulas K, Koutsouraki E, Kordas G, et al. Anti-MuSK- and anti-AChR-positive myasthenia gravis induced by D-penicillamine. *J Neuroimmunol* 2012; 250:94-98.
292. Congeni JP, Kirkpatrick RB. Pegylated interferon induced myasthenia crisis: a case report. *J Clin Neuromuscul Dis* 2013; 14:123-125.
293. Glick ZR, Vaphiades MS, Northington ME. OnabotulinumtoxinA unmasking myasthenia gravis. *Dermatol Surg* 2013; 39:472-473.
294. Blichfeldt-Lauridsen L, Hansen BD. Anesthesia and myasthenia gravis. *Acta Anaesthesiol Scand* 2012; 56:17-22.

295. Jones SC, Sorbello A, Boucher RM. Fluoroquinolone-associated myasthenia gravis exacerbation: evaluation of postmarketing reports from the US FDA adverse event reporting system and a literature review. *Drug Saf* 2011;34:839–847.
296. Dournon N, Buffet P, Caumes E, et al. Artesunate for severe acute *Plasmodium falciparum* infection in a patient with myasthenia gravis. *Am J Trop Med Hyg* 2012; 87:435–436.
297. Pascuzzi RM. Medications and myasthenia gravis (a reference for health-care professionals). Department of Neurology Indiana University School of Medicine. Copyright 2000 by Myasthenia Gravis Foundation of America.
298. Gilhus NE. Is it safe to use statins in patients with myasthenia gravis? *Nat Clin Pract Neurol* 2009; 5:8–9.
299. Hammerstrom AE, Howell J, Gulbis A, et al. Tacrolimus-associated posterior reversible encephalopathy syndrome in hematopoietic allogeneic stem cell transplantation. *Am J Hematol* 2013; 88:301–305.
300. Abbas O, Shamseddin A, Temraz S, Haydar A. Posterior reversible encephalopathy syndrome after bevacizumab therapy in a normotensive patient. *BMJ Case Rep* 2013; 2013:ii:bcr2012007995. doi: 10.1136/bcr-2012-007995.
301. Oshikawa G, Kojima A, Doki N, et al. Bortezomib-induced posterior reversible encephalopathy syndrome in a patient with newly diagnosed multiple myeloma. *Intern Med* 2013; 52:111–114.
302. Wei R, Jin L, Huang J, Luo B. Desmopressin-induced posterior reversible encephalopathy syndrome. *Intern Med* 2012; 51:3081–3084.
303. Stübgen JP. Posterior reversible encephalopathy syndrome (PRES) after granulocyte-colony stimulating factor (G-CSF) therapy: a report of 2 cases. *J Neurol Sci* 2012; 321:35–38.
304. Porcello Marrone LC, Marrone BF, Pascoal TA, et al. Posterior reversible encephalopathy syndrome associated with FOLFOX chemotherapy. *Case Rep Oncol Med* 2013; 2013:306983. doi: 10.1155/2013/306983.
305. Foerster R, Welzel T, Debus J, et al. Posterior reversible leukoencephalopathy syndrome associated with pazopanib. *Case Rep Oncol* 2013; 6:204–208.
306. Kushner BH, Modak S, Basu EM, et al. Posterior reversible encephalopathy syndrome in neuroblastoma patients receiving anti-GD2 3F8 monoclonal antibody. *Cancer* 2013; 119:2789–2795.
307. Al Bu Ali WH. Ciprofloxacin-associated posterior reversible encephalopathy. *BMJ Case Rep* 2013; 2013:ii:bcr2013008636. doi: 10.1136/bcr-2013-008636.
308. Dotan G, Goldstein M, Stolovitch C, Kesler A. Pediatric pseudotumor cerebri associated with low serum levels of vitamin A. *J Child Neurol* 2013. [Epub ahead of rint].
309. Besch D, Makowski C, Steinborn MM, et al. Visual loss without headache

- in children with pseudotumor cerebri and growth hormone treatment. *Neuropediatrics* 2013; 44:203–207.
310. Biousse V, Bruce BB, Newman NJ. Neuro-ophthalmology update on the pathophysiology and management of idiopathic intracranial hypertension. *J Neurol Neurosurg Psychiatry* 2012; 83:488–494.
311. Re' mi J, Hu" ttenbrenner A, Feddersen B, Noachtar S. Carbamazepine but not pregabalin impairs eye control: a study on acute objective CNS side effects in healthy volunteers. *Epilepsy Res* 2010; 88:145–150.
312. Gosala Raja Kukkuta S, Srinivas M, Raghunandan N, et al. Reversible vertical gaze palsy in sodium valproate toxicity. *J Neuroophthalmol* 2013; 33:202–203.
313. Carstairs SD, Schneir AB. Opsoclonus due to diphenhydramine poisoning. *N Engl J Med* 2010; 363:e40.
314. Guiloff RJ, Whiteley A, Kelly RE. Organic convergence spasm. *Acta Neurol Scand* 1980; 61:252–259.
315. Veerapandiyam A, Gallentine WB, Winchester SA, et al. Oculogyric crises secondary to lamotrigine overdose. *Epilepsia* 2011; 52:e4–e6.
316. Arumugam J, Vijayalakshmi AM. Metoclopramide-induced oculogyric crisis presenting as encephalitis in a young girl. *Indian J Pharmacol* 2012; 44:266–267.
317. Bayram E, Bayram MT, Hiz S, Turkmen M. Cefixime-induced oculogyric crisis. *Pediatr Emerg Care* 2012; 28:55–56.
318. Caulfield MP. Muscarinic receptors: characterisation, coupling and function. *Pharmacol Therap* 1993; 58:319–379.
319. Enriquez-de-Salamanca A, Calonge M. Muscarinic receptors in the ocular surface. *Curr Opin Allergy Clin Immunol* 2006; 6:379–382.
320. Nietgen GW, Schmidt J, Hesse L, et al. Muscarinic receptor functioning and distribution in the eye: molecular basis and implications for clinical diagnosis and therapy. *Eye* 1999; 13:285–300.
321. . O'Neill EC, Danesh-Meyer HV, Connell PP, et al. The optic nerve head in acquired optic neuropathies. *Nat Rev Neurol* 2010; 6:221–236.
322. Smolen JS, Landewe R Breedveld FC, Buch M, Burmester G, Dougados M, et al. EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs: 2013 update. *Ann. Rheum. Dis* 2014; 73(3): 492–509.
323. Fanouriakis A, Kostopoulou M, Alunno A, Aringer M, Bajema I, Boletis JN et al. 2019 update of the EULAR recommendations for the management of systemic lupus erythematosus. *Ann. Rheum. Dis* 2019; 78(6): 736–745.
324. Tektonidou MG, Andreoli L, Limper M, Amoura Z, Cervera R, Costedoat-Chalumeau N et al. EULAR recommendations for the management of antiphospholipid syndrome in adults. *Ann. Rheum. Dis* 2019;

- 78(6):1296–1304.
325. Vivino FB, Carsons SE, Foulks G, Daniels TE, Parke A, Brennan MT et al. New treatment guidelines for Sjogren's disease. *Rheum. Dis. Clin. North. Am* 2016; 42(3): 531–551.
  326. Messai, A. in *Emerging Research on Bioinspired Materials Engineering* (ed. Bououdina, M.) IGI Global, 2016 160–196.
  327. Cutler DJ, MacIntyre AC, Tett SE. Pharmacokinetics and cellular uptake of 4-aminoquinoline antimalarials. *Agents Actions Suppl* 1988. 24, 142–157.
  328. Rynes RI, Bernstein HN. Ophthalmologic safety profile of antimalarial drugs. *Lupus* 1993 2, S17–S19.
  329. Lee MG, Kim SJ, Ham DI, et al. Macular retinal ganglion cell inner plexiform layer thickness in patients on hydroxychloroquine therapy. *Invest Ophthalmol Vis Sci* 2014;56:396–402. 330. Sisternes L, Hu J, Rubin DL, Marmor MF. Localization of damage in progressive hydroxychloroquine retinopathy on and off the drug: inner versus outer retina, parafovea versus peripheral fovea. *Invest Ophthalmol Vis Sci* 2015;56:3415–26.
  331. Melles RB, Marmor MF. Pericentral retinopathy and racial differences in hydroxychloroquine toxicity. *Ophthalmology* 2015;122:110–6.
  332. Lee DH, Melles RB, Joe SG, et al. Pericentral hydroxychloroquine retinopathy in Korean patients. *Ophthalmology* 2015;122:1252–6.
  333. Melles RB, Marmor MF. Pericentral retinopathy and racial differences in hydroxychloroquine toxicity. *Ophthalmology* 2015;122:110–6.
  334. Melles RB, Marmor MF. The risk of toxic retinopathy in patients on long-term hydroxychloroquine therapy. *JAMA Ophthalmol* 2014;132:1453–60.
  335. Kellner S, Weinitz S, Farmand G, Kellner U. Cystoid macular oedema and epiretinal membrane formation during progression of chloroquine retinopathy after drug cessation. *Br J Ophthalmol* 2014;98:200–6.
  336. Marmor MF, Hu J. Effect of disease stage on progression of hydroxychloroquine retinopathy. *JAMA Ophthalmol* 2014;132:1105–12
  337. Shroyer NF, Lewis RA, Lupski JR. Analysis of the ABCR (ABCA4) gene in 4-aminoquinoline retinopathy: is retinal toxicity by chloroquine and hydroxychloroquine related to Stargardt disease? *Am J Ophthalmol* 2001;131:761–6.
  338. Grassman F, Bergholz R, Mändl J. Common synonymous variants in ABCA4 are protective for chloroquine induced maculopathy (toxic maculopathy). *BMC Ophthalmol* 2015;15:18.
  339. Miller FS, Bunt-Milam AH, Kalina RE. Clinical ultrastructural study of thioridazine retinopathy. *Ophthalmology* 1982;89:1478–1488.
  340. Richa S, Yazbek JC. Ocular adverse effects of common psychotropic agents: a review. *CNS Drugs*. 2010;24(6):501–526.
  341. Fraunfelder FT. *Drug-induced Ocular Side Effects*. 4th ed. Philadelphia, U-

- SA:LippincottWilliams&Wilkins;1996.
342. SchwartzSG,MielerWF.Medicationsandretinaltoxicity. *Ophthalmol Clin-NorthAm.* 2002;15(4):517–528.
  343. Scholz, R. T., & Sunness, J. S. (2014). DARK ADAPTATION ABNORMALITIES AND RECOVERY IN ACUTE THIORIDAZINE TOXICITY. *Retinal Cases & Brief Reports*, 8(1), 45–49. doi:10.1097/icb.0000000000000000
  344. V.C. Barry ,An organic chemist’s approach to the chemotherapy of tuberculosis *Ir. J. Med. Sci.* (1926-1967), 26 (10) (1951), pp. 453-473
  345. V.C. Barry, J.G. Belton, M.L. Conalty, J.M. Deneny, D.W. Edward, J.F. O’Sullivan, D. Twomey, F. Winder. A new series of phenazines (rimino-compounds) with high antituberculosis activity *Nature*, 179 (4568) (1957), pp. 1013-1015.
  346. R. O’Connor, J.F. O’Sullivan, R. O’Kennedy. The pharmacology, metabolism, and chemistry of clofazimine *Drug Metab. Rev.*, 27 (4) (1995), pp. 591-614.
  347. S.G. Browne, L.M. Hogerzeil. B 663” in the treatment of leprosy. Preliminary report of a pilot trial *Lepr. Rev.*, 33 (1962), pp. 6-10.
  348. WHO Study Group on Chemotherapy of Leprosy for Control Programmes & World Health Organization. ( 1982) . Chemotherapy of leprosy for control programmes : report of a WHO study group [ meeting held in Geneva from 12 to 16 October 1981] . World Health Organization. (<https://iris.who.int/handle/10665/38984>).
  349. In vitro activity of clofazimine against rapidly growing nonchromogenic mycobacteria *Antimicrob. Agents Chemother.*, 29 (5) (1986), pp. 951-952.
  350. S.A. McGuffin, P.S. Pottinger, J.P. Harnisch Clofazimine in nontuberculous mycobacterial infections: a growing niche *Open Forum Infect. Dis.*, 4 (3) (2017), p. ofx147.
  351. D. Falzon, H.J. Schünemann, E. Harausz, L. González Angulo, C. Lienhardt, E. Jaramillo, K. Weyer World Health Organization treatment guidelines for drug-resistant tuberculosis, 2016 update *Eur. Respir. J.*, 49 (3) (2017), p. 1602308.
  352. A. Van Deun, A.K. Maug, M.A. Salim, P.K. Das, M.R. Sarker, P. Daru, H.L. Rieder Short, highly effective, and inexpensive standardized treatment of multidrug-resistant tuberculosis *Am. J. Respir. Crit. Care Med*, 182 (5) (2010), pp. 684-692.
  353. K.J. Aung, A. VanDeun, E. Declercq, M.R. Sarker, P.K. Das, M.A. Hossain, H.L. Rieder. Successful <9-month Bangladesh regimen> for multidrug-resistant tuberculosis among over 500 consecutive patients *Int J. Tube Lung Dis.*, 18 (10) (2014), pp. 1180-1187.
  354. M.C. Cholo, M.T. Mothiba, B. Fourie, R. Anderson. Mechanisms of action and therapeutic efficacies of the lipophilic antimycobacterial agents

- clofazimine and bedaquiline J. Antimicrob. Chemother., 72 (2) (2017), pp. 338-353.
355. M.C. Cholo, H.C. Steel, P.B. Fourie, W.A. Germishuizen, R. Anderson. Clofazimine: current status and future prospects J. Antimicrob. Chemother., 67 (2) (2012), pp. 290-298.
356. (who.int/publications/m/item/haftalik-epidemiyojik-updateguncelleme-on-covid-19-20-Temmuz-2023).
357. W. Wan, S. Zhu, S. Li, W. Shang, R. Zhang, H. Li, W. Liu, G. Xiao, K. Peng, L. Zhang. High-throughput screening of an FDA-approved drug library identifies inhibitors against arenaviruses and SARS-CoV-2 ACS Infect. Dis., 7 (6) (2021), pp. 1409-1422.
358. Craythorn JM, Swartz M, Creel DJ. Clofazimine-induced bull's-eye retinopathy. Retina. 1986;6(1):50-52
359. Cunningham CA, Friedberg DN, Carr RE. Clofazimine-induced generalized retinal degeneration. Retina. 1990;10(2):131-134.
360. Forster DJ, Causey DM, Rao NA. Bull's eye retinopathy and clofazimine. Annals of internal medicine. 1992;116(10):876-877.
361. Aronson JK. An account of foxglove and its medical uses 1785–1985. Oxford: Oxford University press; 1985.
362. McMurray JJ, Adamopoulos S, Anker SD, Auricchio A, Bohm M, Dickstein K, Falk V, Filippatos G, Fonseca C, Gomez-Sanchez MA, et al. ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2012: the task force for the diagnosis and treatment of acute and chronic heart failure 2012 of the European Society of Cardiology. Developed in collaboration with the Heart Failure Association (HFA) of the ESC. Eur Heart J. 2012;33(14):1787–847.
363. Camm AJ, Lip GY, De Caterina R, Savelieva I, Atar D, Hohnloser SH, Hindricks G, Kirchhof P. Guidelines-CPG ESCCFP, document R: 2012 focused update of the ESC guidelines for the management of atrial fibrillation: an update of the 2010 ESC guidelines for the management of atrial fibrillation developed with the special contribution of the European Heart Rhythm Association. Europace Eur Pacing Arrhythm Card Electrophysiol J Work Groups Card Pacing Arrhythm Card Cell Electrophysiol Eur Soc Cardiol. 2012;14(10):1385–413.
364. Pautas E, Lopez C, Gouronnec A, Gravelaine S, Peyron I, Lapostolle F. Focus on digitalis intoxication in the elderly. Report of a case treated with digoxin-specific Fab antibody fragments. Geriatrie et psychologie neuropsychiatrie du vieillissement. 2012;10(4):355–63.
365. Jackson HJ, Zerfas LG. A case of yellow vision associated with digitalis poisoning. Boston Med Surg J. 1925;192:890–3.
366. Renard D, Rubli E, Voide N, Borruat FX, Rothuizen LE., Spectrum of digoxin-induced ocular toxicity: a case report and literature review. BMC Res Notes. 2015 Aug 23;8:368. doi: 10.1186/s13104-015-1367-6.

367. Aronson JK. An account of foxglove and its medical uses 1785–1985. Oxford: Oxford University press; 1985.
368. Capellan P, Mahrous MA, Kovacs KD. OCT Findings in Presumed Digoxin Retinal Toxicity. *Ophthalmology Retina*. 2021; 5(11):1173-1175.
369. G. M. Brittenham, “Iron-chelating therapy for transfusional iron overload,” *The New England Journal of Medicine*, vol. 364, no. 2, pp. 146–156, 2011.
370. J. B. Porter, “A risk-benefit assessment of iron-chelation therapy,” *Drug Safety*, vol. 17, no. 6, pp. 407–421, 1997.
371. A. Jacobs, “Iron overload: clinical and pathologic aspects,” *Seminars in Hematology*, vol. 14, no. 1, pp. 89–113, 1977.
372. P. Ackrill, A. J. Ralston, J. P. Day, and K. C. Hodge, “Successful removal of aluminium from patient with dialysis encephalopathy,” *The Lancet*, vol. 2, no. 8196, pp. 692–693, 1980.
373. H. K. Stummvoll, H. Graf, and V. Meisinger, “Effect of desferrioxamine on aluminum kinetics during hemodialysis,” *Mineral and Electrolyte Metabolism*, vol. 10, no. 4, pp. 263–266, 1984.
374. S.-H. Chen, D.-C. Liang, H.-C. Lin, S.-Y. Cheng, L.-J. Chen, and H.-C. Liu, “Auditory and visual toxicity during deferoxamine therapy in transfusion-dependent patients,” *Journal of Pediatric Hematology/Oncology*, vol. 27, no. 12, pp. 651–653, 2005.
375. N. F. Olivieri, J. R. Buncic, E. Chew et al., “Visual and auditory neurotoxicity in patients receiving subcutaneous deferoxamine infusions,” *The New England Journal of Medicine*, vol. 314, no. 14, pp. 869–873, 1986.
376. A. Cohen, M. Martin, J. Mizanin, D. F. Konkle, and E. Schwartz, “Vision and hearing during deferoxamine therapy,” *The Journal of Pediatrics*, vol. 117, no. 2, pp. 326–330, 1990.
377. R. Haimovici, D. J. D’Amico, E. S. Gragoudas, S. Sokol, and Deferoxamine Retinopathy Study Group, “The expanded clinical spectrum of deferoxamine retinopathy,” *Ophthalmology*, vol. 109, no. 1, pp. 164–171, 2002.
378. Y.-L. Chan, C.-W.W. Chu, K.-W. Chik, L.-M. Pang, M.-K. Shing, and C.-K. Li, “Deferoxamine-induced dysplasia of the knee: sonographic features and diagnostic performance compared with magnetic resonance imaging,” *Journal of Ultrasound in Medicine*, vol. 20, no. 7, pp. 723–728, 2001.
379. S.-H. Chen, D.-C. Liang, H.-C. Lin, S.-Y. Cheng, L.-J. Chen, and H.-C. Liu, “Auditory and visual toxicity during deferoxamine therapy in transfusion-dependent patients,” *Journal of Pediatric Hematology/Oncology*, vol. 27, no. 12, pp. 651–653, 2005.
380. N. F. Olivieri, J. R. Buncic, E. Chew et al., “Visual and auditory neurotoxicity in patients receiving subcutaneous deferoxamine infusions,” *The New England Journal of Medicine*, vol. 314, no. 14, pp. 869–873, 1986.
381. S. C. Davies, J. L. Hungerford, G. B. Arden, R. E. Marcus, M. H. Miller, and E. R. Huehns, “Ocular toxicity of high-dose intravenous desferrioxa-

- mine," *The Lancet*, vol. 2, no. 8343, pp. 181–184, 1983.
382. D. R. Blake, P. Winyard, J. Lunec et al., "Cerebral and ocular toxicity induced by desferrioxamine," *The Quarterly Journal of Medicine*, vol. 56, no. 219, pp. 345–355, 1985.
383. F. Viola, G. Barteselli, L. Dell'Arti et al., "Abnormal fundus autofluorescence results of patients in long-term treatment with deferoxamine," *Ophthalmology*, vol. 119, no. 8, pp. 1693–1700, 2012.
384. S. de Virgiliis, M. Congia, M. P. Turco et al., "Depletion of trace elements and acute ocular toxicity induced by desferrioxamine in patients with thalassaemia," *Archives of Disease in Childhood*, vol. 63, no. 3, pp. 250–255, 1988.
385. A. E. Leure-duPree and C. J. McClain, "The effect of severe zinc deficiency on the morphology of the rat retinal pigment epithelium," *Investigative Ophthalmology and Visual Science*, vol. 23, no. 4, pp. 425–434, 1982.
386. D. Tate and D. Newsome, "A novel zinc compound (zinc monocysteine) enhances the antioxidant capacity of human retinal pigment epithelial cells," *Current Eye Research*, vol. 31, no. 7-8, pp. 675–683, 2006.
387. G. B. Arden, B. Wonke, C. Kennedy, and E. R. Huehns, "Ocular changes in patients undergoing long-term desferrioxamine treatment," *British Journal of Ophthalmology*, vol. 68, no. 12, pp. 873–877, 1984.
388. C. Bene, A. Manzler, D. Bene, and G. Kranias, "Irreversible ocular toxicity from single "challenge" dose of deferoxamine," *Clinical Nephrology*, vol. 31, no. 1, pp. 45–48, 1989.
389. D. R. Blake, P. Winyard, J. Lunec et al., "Cerebral and ocular toxicity induced by desferrioxamine," *The Quarterly Journal of Medicine*, vol. 56, no. 219, pp. 345–355, 1985.
390. F. Viola, G. Barteselli, L. Dell'Arti et al., "Multimodal imaging in deferoxamine retinopathy," *Retina*, vol. 34, pp. 1428–1438, 2014.
391. A. H. S. Rahi, J. L. Hungerford, and I. Ahmed, "Ocular toxicity of desferrioxamine: light microscopic histochemical and ultrastructural findings," *The British Journal of Ophthalmology*, vol. 70, no. 5, pp. 373–381, 1986.
392. N. F. Olivieri and G. M. Brittenham, "Iron-chelating therapy and the treatment of thalassaemia," *Blood*, vol. 89, no. 3, pp. 739–761, 1997.
393. Whitcup SM, Butler KM, Pizzo PA, Nussenblatt RB. Retinal lesions in children treated with dideoxyinosine. *N Engl J Med* 1992;326:1226–1227.
394. Nguyen BY, Shay LE, Wyvill KM, et al. A pilot study of sequential therapy with zidovudine plus acyclovir, dideoxyinosine, and dideoxycytidine in patients with severe human immunodeficiency virus infection. *J Infect Dis* 1993;168:810–817.
395. Cobo J, Ruiz MF, Figueroa MS, et al. Retinal toxicity associated with didanosine in HIV-infected adults. *AIDS* 1996;10:1297–1300.
396. Gabrielian A, MacCumber MM, Kukuyev A, et al. Didanosine-associated retinal toxicity in adults infected with human immunodeficiency virus.

- JAMA Ophthalmol 2013;131:255–259.
397. Haug S, Wong RW, Day S, Choudhry N, Sneed S, Prasad P, Read S, McDonald RH, Agarwal A, Davis J, Sarraf D. Didanosine retinal toxicity. *Retina*, 2016 Dec;36 Suppl 1:S159-S167. doi: 10.1097/IAE.0000000000001267.
  398. Sun Y, Liu WZ, Liu T, et al. Signaling pathway of MAPK/ERK in cell proliferation, differentiation, migration, senescence and apoptosis. *J Recept Signal Transduct Res* 2015; 35:600–604.
  399. Sun Y, Liu WZ, Liu T, et al. Signaling pathway of MAPK/ERK in cell proliferation, differentiation, migration, senescence and apoptosis. *J Recept Signal Transduct Res* 2015; 35:600–604.
  400. Cargnello M, Roux PP. Activation and function of the MAPKs and their substrates, the MAPK-activated protein kinases. *Microbiol Mol Biol Rev* 2011;75:50–83.
  401. Eggermont AM, Spatz A, Robert C. Cutaneous melanoma. *Lancet* 2014;383:816–827
  402. Satyamoorthy K, Li G, Gerrero MR, et al. Constitutive mitogen-activated protein kinase activation in melanoma is mediated by both BRAF mutations and autocrine growth factor stimulation. *Cancer Res* 2003;63:756–759.
  403. Hodis E, Watson IR, Kryukov GV, et al. A landscape of driver mutations in melanoma. *Cell* 2012;150:251–263.
  404. Ji Z, Flaherty KT, Tsao H. Targeting the RAS pathway in melanoma. *Trends Mol Med* 2012;18:27–35.
  405. Stjepanovic, N, Velazquez-Martin, JP, Bedard PL. Ocular toxicities of MEK inhibitors and other targeted therapies. *Annals of Oncology*. 2016;27(6), 998-1005.
  406. Mendez-Martinez S, Calvo P, Ruiz-Moreno O, Baron NP, Bueno JL, Ruiz MRG et al. Ocular adverse events associated with MEK inhibitors Review. *Retina* 2019; 39(8):1435-1450.
  407. Huang W, Yang AH, Matsumoto D, et al. PD0325901, a mitogen-activated protein kinase kinase inhibitor, produces ocular toxicity in a rabbit animal model of retinal vein occlusion. *J Ocul Pharmacol Ther* 2009; 25: 519–530.
  408. Jiang Q, Cao C, Lu S, et al. MEK/ERK pathway mediates UVB-induced AQP1 downregulation and water permeability impairment in human retinal pigment epithelial cells. *Int J Mol Med* 2009; 23: 771–777.
  409. McCannel TA, Chmielowski B, Finn RS, Goldman J, Ribas A, Wainberg ZA et al. Bilateral subfoveal neurosensory retinal detachment associated with MEK inhibitor use for metastatic cancer. *JAMA Ophthalmol* 2014; 132(8):1005–1009. 39.
  410. Francis JH, Habib LA, Abramson DH, Yannuzzi LA, Heinemann M, Gounder MM et al. Clinical and morphologic characteristics of MEK inhibitor-associated retinopathy: differences from central serous choriore-

- tinopathy. *Ophthalmology* 2017;124(12):1788–1798.
411. Urner-Bloch U, Urner M, Jaberg-Bentele N, et al. MEK inhibitor-associated retinopathy (MEKAR) in metastatic melanoma: long-term ophthalmic effects. *Eur J Cancer* 2016;65:130–138.
  412. Vinberg, F; Chen, J.; Kefalov, V.J. Regulation of calcium homeostasis in the outer segments of rod and cone photoreceptors. *Prog.Retin. Eye Res.* 2018, 67, 87–101.
  413. Bischoff, E. Potency, selectivity, and consequences of nonselectivity of PDE inhibition. *Int. J. Impot. Res.* 2004, 16, S11–S14.
  414. Boswell-Smith, V; Spina, D.; Page, C.P. Phosphodiesterase inhibitors. *Br. J. Pharmacol.* 2006, 147, 252–257.
  415. Zucchi, A.; Costantini, E.; Scropo, F.I.; Silvani, M.; Kopa, Z.; Illiano, E.; Petrillo, M.G.; Cari, L.; Nocentini, G. The first-generation phosphodiesterase 5 inhibitors and their pharmacokinetic issue. *Andrology* 2019, 7, 804–817.
  416. Bhogal, S.; Khraisha, O.; Al Madani, M.; Treece, J.; Baumrucker, S.J.; Paul, T.K. Sildenafil for Pulmonary Arterial Hypertension. *Am. J. Ther.* 2019, 26, e520–e526.
  417. Ferguson, J.E.; Carson, C.C. Phosphodiesterase type 5 inhibitors as a treatment for erectile dysfunction: Current information and new horizons. *Arab J. Urol.* 2013, 11, 222–229.
  418. Anderson, K. PDE5 inhibitors-pharmacology and clinical applications 20 years after sildenafil discovery. *Br. J. Pharmacol.* 2018,175, 2554–2565.
  419. Corona, G.; Rastrelli, G.; Burri, A.; Jannini, E.A.; Maggi, M. The safety and efficacy of Avanafil, a new 2nd generation PDE5i:Comprehensive review and meta-analysis. *Expert Opin. Drug Saf.* 2016, 15, 237–247.
  420. Taylor, J.; Baldo, O.B.; Storey, A.; Cartledge, J.; Eardley, I. Differences in side-effect duration and related bother levels between phosphodiesterase type 5 inhibitors. *BJU Int.* 2009, 103, 1392–1395.
  421. Bischoff, E. Potency, selectivity, and consequences of nonselectivity of PDE inhibition. *Int. J. Impot. Res.* 2004, 16, S11–S14.
  422. Cordell WH, Maturi RK, Costigan TM, Marmor MF, Weleber RG, Coup-land SG, Danis RP, McGettigan JW Jr, Antoszyk AN, Klise S, Sides GD: Retinal effects of 6 months of daily use of tadalafil or sildenafil. *Arch Ophthalmol* 2009;127:367–373.
  423. Marmor MF, Kessler R: Sildenafil (viagra) and ophthalmology. *Surv Ophthalmol* 1999; 44:153–162
  424. Coleman, D.J.; Lee,W.; Chang, S.; Silverman, R.H.; Lloyd, H.O.; Daly, S.; Tsang, S.H. Treatment of Macular Degeneration with Sildenafil: Results of a Two-Year Trial. *Ophthalmologica* 2018, 240, 45–54.
  425. Matieli, L.; Berezovsky, A.; Salomão, S.R.; Allemann, N.; Martins, E.N.; Hirai, F.E.; Ota-Arakaki, J.; Morales, M.S.A.; de Freitas, D. Ocular toxicity assessment of chronic sildenafil therapy for pulmonary arterial hyperten-

- sion. Graefe's Arch. Clin. Exp. Ophthalmol.2016, 254, 1167–1174.
426. Luu JK, Chappelow AV, McCulley TJ, Marmor MF: Acute effects of sildenafil on the electroretinogram and multifocal electroretinogram. *Am J Ophthalmol* 2001; 132: 388–394.
  427. Quiram P, Dumars S, Parwar B, Sarraf D. Viagra-associated serous macular detachment. *GraefesArchClinExpOphthalmol.* 2005;243(4):339–344.
  428. Dowlati A, Crosby L, Remick SC, et al. Paclitaxel added to the cisplatin/etoposide regimen in extensive-stage small cell lung cancer—the use of complete response rate as the primary endpoint in phase II trials. *Lung Cancer* 2001;32:155–162.
  429. Katz BJ, Ward JH, Digre KB, Crell DJ, Mamalis N. Persistent severe visual and electroretinographic abnormalities after intravenous Cisplatin therapy. *J euroophthalmol* 2003; 23(2): 132–135.
  430. Khawly JA, Rubin P, Petros W, Jaffe GJ. Retinopathy and optic neuropathy in bone marrow transplantation for breast cancer. *Ophthalmology* 1996; 103(1): 87–95.
  431. Langevin S, Chang JS and Chang S. Serous retinopathy associated with Cisplatin treatment. *Retin Cases Brief Rep* 2019; 13(3):211–214.
  432. Lin teh B., Duggan R., Leslie T. Bilateral Subfoveal Serous Detachment Following Cisplatin Chemotherapy. *Eur J Ophtalmol.* 2021 Sep;31(5):NP19-NP22. doi: 10.1177/1120672120921373.
  433. Carter SK, Newman JW: Nitrosoureas: 1,3-bis(2-chloroethyl)-1-nitrosourea (NSC-409962;BCNU) and 1-(2-chloroethyl)-3-cyclohexyl-1-nitrosourea (NSC-79037; CCNU). *Cancer Chemother Rep* 1968;1(pt 3):115-151.
  434. DeVita V, Carbone P, Owens A, et al: Clinical trials with 1,3-bis(2-chloroethyl)-1-nitrosourea (NSC-409962). *Cancer Res* 1965;25:1876–1881.
  435. Kupersmith MJ, Seiple WH, Holopigian K, Noble K, Hiesiger E, Warren F. Maculopathy caused by intra-arterially administered cisplatin and intravenously administered carmustine. *Am J Ophthalmol* 1992;113(4):435–8.
  436. Davies AJ, Kelly SP, Naylor SG, Bhatt PR, Mathews JP, Sahni J et al. Adverse ophthalmic reaction in poppers users: case series of “poppers maculopathy.” *Eye.* 2012;26(11):1479-1486.
  437. Gruener AM, Jeffries MA, El Housseini Z, Whitefield L. Poppers maculopathy. *Lancet.* 2014;384(9954):1606. 438. Van Bol LB, Kurt RA, Keane PA, Pal B, Sivaprasad S. Clinical Phenotypes of Poppers Maculopathy and Their Links to Visual and Anatomic Recovery. *Ophthalmology* 2017;124(9):1425-1427.
  439. Clemens CR, Alten F, Loos D, Uhlig CE, Heiduschka P, Eter N. Poppers maculopathy or retinopathy? *Eye(Lond).*2015;29(1):148-149.
  440. Isabelle Audo I, El Sanharawi M, Vignal-Clermont C, Villa A, Morin A, Conrath J et al. Foveal damage in habitual poppers users. *Arch Ophthal-*

- mol. 2011;129(6):703-708.
441. Pahlitzsch M, Mai C, Jousseaume AM, Bergholz R. Poppers maculopathy: complete restitution of macular changes in OCT after drug abstinence. *Semin Ophthalmol.* 2016;31(5):479-484.
  442. Davies AJ, Kelly SP, Naylor SG, Bhatt PR, Mathews JP, Sahni J et al. Adverse ophthalmic reaction in poppers users: case series of "poppers maculopathy." *Eye.* 2012;26(11):1479-1486.
  443. F. Neu, "Les oedèmes maculaires cystoïdes (OMC)," *Bulletin de la Société Belge d'Ophthalmologie*, vol. 304, pp. 71-76, 2007.
  444. T. G. Rotsos and M. M. Moschos, "Cystoid macular edema," *Journal of Clinical Ophthalmology*, vol. 2, no. 4, pp. 919-930, 2008.
  445. J. J. Kanski, *Ophthalmologia Clinica*, Elsevier, New York, NY, USA, 2008.
  446. A. S. Wierzbicki, "Niacin: the only vitamin that reduces cardiovascular events," *International Journal of Clinical Practice*, vol. 65, no. 4, pp. 379-385, 2011.
  447. V. S. Kamanna and M. L. Kashyap, "Mechanism of action of niacin," *American Journal of Cardiology*, vol. 101, no. 8, pp. 20B-26B, 2008. [5] A. S. Wierzbicki, "Niacin: the only vitamin that reduces cardiovascular events," *International Journal of Clinical Practice*, vol. 65, no. 4, pp. 379-385, 2011.
  448. D.M. Capuzzi, J.M. Morgan, O.A. Brusco Jr., and C.M. Intenzo, "Niacin dosing: relationship to benefits and adverse effects," *Current Atherosclerosis Reports*, vol. 2, no. 1, pp. 64-71, 2000.
  449. M. Lukasova, J. Hanson, S. Tunaru, and S. Offermanns, "Nicotinic acid (niacin): new lipid-independent mechanisms of action and therapeutic potentials," *Trends in Pharmacological Sciences*, vol. 32, no. 12, pp. 700-707, 2011.
  450. F. W. Fraunfelder, F. T. Fraunfelder, and D. R. Illingworth, "Adverse ocular effects associated with niacin therapy," *British Journal of Ophthalmology*, vol. 79, no. 1, pp. 54-56, 1995. [9] F. W. Fraunfelder, "Ocular side effects from herbal medicines and nutritional supplements," *American Journal of Ophthalmology*, vol. 138, no. 4, pp. 639-647, 2004.
  451. J. D. Gass, "Nicotinic acid maculopathy. 1973," *Retina*, vol. 23, no. 6, pp. 500-510, 2003.
  452. D. M. Devaney, "Maculopathy induced by nicotinic acid," *Clinical Eye and Vision Care*, vol. 10, no. 2, pp. 67-71, 1998.
  453. S. Karakashian and C. D. Bayliff, "Niacin-induced cystoid macular edema," *The Canadian Journal of Hospital Pharmacy*, vol. 54, no. 1, pp. 35-36, 2001.
  454. M. Mizutani, C. Gerhardinger, and M. Lorenzi, "Müller cell changes in human diabetic retinopathy," *Diabetes*, vol. 47, no. 3, pp. 445-449, 1998.
  455. Q. Li and D. G. Puro, "Diabetes-induced dysfunction of the glutamate transporter in retinal Müller cells," *Investigative Ophthalmology & Vi-*

- sual Science, vol. 43, no. 9, pp. 3109–3116, 2002.
456. Wani MC, Taylor HL, Wall ME, et al. Plant Antitumor Agents.VI. The isolation and structure of taxol, a novel antileukemic and antitumor agent from *Taxus Brevifolia* 2. *J Am Chem Soc* 1971; 3:2325–2327.
  457. Dumontet C, Sikic BI. Mechanisms of action of and resistance to antitubulin agents: Microtubule dynamics, drug transport, and cell death. *J Clin Oncol* 1999; 17:1061–1070. <https://doi.org/10.1200/JCO.1999.17.3.1061>.
  458. Béhar A, Pujade Lauraine E, Maurel A, et al. The pathophysiological mechanism of fluid retention in advanced cancer patients treated with docetaxel, but not receiving corticosteroid comedication. *Br J Clin Pharmacol* 1997; 43: 653–658.
  459. Noguchi Y, Kawashima Y, Maruyama M, et al. Risk factors for eye disorders caused by paclitaxel: A retrospective study. *Biol Pharm Bull* 2018; 41:1694–1700. <https://doi.org/10.1248/bpb.b18-00444>.
  460. Joshi MM, Garretson BR. Paclitaxel maculopathy. *Arch Ophthalmol* 2007; 125: 709–710. <https://doi.org/10.1001/archophth.125.5.709>.
  461. Smith S, Benz M, Brown D. Cystoid macular edema secondary to albumin-bound paclitaxel therapy. *Arch Ophthalmol* 2008; 126: 1605–1606. <https://doi.org/10.1001/archophth.126.11.1605>
  462. Matsuoka N, Hasebe H, Mayama T, et al. Sub-tenon injections of triamcinolone acetonide had limited effect on cystoid macular edema secondary to nanoparticle albumin-bound paclitaxel (Abraxane). *Case Rep Ophthalmol Med* 2015;181269. <https://doi.org/10.1155/2015/181269>.
  463. Rahman HT, Yeh S, Bergstrom CS. Cystoid macular edema without leakage secondary to nab- paclitaxel (abraxane): Clinical experience with intravitreal bevacizumab. *J Ocul Pharmacol Ther* 2013; 29: 360–362. <https://doi.org/10.1089/jop.2011.0178>
  464. Kuznetcova TI, Cech P, Herbort CP. The mystery of angiographically silent macular oedema due to taxanes. *Int Ophthalmol* 2012; 32:299–304. <https://doi.org/10.1007/s10792-012-9558-9>.
  465. Sridhar J, Shahlaee A, Ehmann D, et al. En face optical coherence tomography and optical coherence tomography angiography imaging of taxane-associated cystoid macular edema. *Ophthalmic Surg Lasers Imaging Retin* 2016, 47:176–179. <https://doi.org/10.3928/23258160-20160126-12>.
  466. Di Pippo M., Di Staso F, De Ponte C., Fragiotta S., Abdolrahimzade S. Nab-paclitaxel Related Cystoid Macular Edema. *Clin Ter* 2022; 173 (4):377-383 doi: 10.7417/CT.2022.2449
  467. Walton C, King R, Rechtman L, et al.: Rising prevalence of multiple sclerosis worldwide: insights from the Atlas of MS, third edition. *Mult Scler*. 2020, 26:1816-21. [10.1177/1352458520970841](https://doi.org/10.1177/1352458520970841).
  468. Reich DS, Lucchinetti CF, Calabresi PA: Multiple sclerosis. *N Engl J Med*.

- 2018, 378:169-80. 10.1056/NEJMra1401483.
469. Milo R, Kahana E: Multiple sclerosis: geoepidemiology, genetics and the environment . *Autoimmun Rev.* 2010, 9:A387-94. 10.1016/j.autrev.2009.11.010.
470. Zorzon M, Zivadinov R, Nasuelli D, et al.: Risk factors of multiple sclerosis: a case-control study . *Neurol Sci.* 2003, 24:242-7. 10.1007/s10072-003-0147-6.
471. Compston A, Coles A: Multiple sclerosis. *Lancet.* 2008, 372:1502-17. 10.1016/S0140-6736(08)61620 -7.
472. Brownlee WJ, Hardy TA, Fazekas F, Miller DH: Diagnosis of multiple sclerosis: progress and challenges . *Lancet.* 2017, 389:1336-46. 10.1016/S0140-6736(16)30959-X .
473. Jacobs LD, Beck RW, Simon JH, et al.: Intramuscular interferon beta-1a therapy initiated during a first demyelinating event in multiple sclerosis. CHAMPS Study Group. *N Engl J Med.* 2000, 343:898-904.10.1056/NEJM200009283431301.
474. Chun J, Hartung HP: Mechanism of action of oral fingolimod (FTY720) in multiple sclerosis . *Clin Neuropharmacol.* 2010, 33:91-101. 10.1097/WNF.0b013e3181cbf825.
475. Fernández O, Izquierdo G, Aguera E, et al.: Comparison of first-line and second-line use of fingolimod in relapsing MS: The open-label EARLIMS study. *Mult Scler J Exp Transl Clin.* 2020, 6:2055217320957358.10.1177/2055217320957358.
476. Brinkmann V, Davis MD, Heise CE, et al.: The immune modulator FTY720 targets sphingosine 1-phosphate receptors. *J Biol Chem.* 2002, 277:21453-7. 10.1074/jbc.C200176200
477. Willis MA, Cohen JA: Fingolimod therapy for multiple sclerosis . *Semin Neurol.* 2013, 33:37-44. 10.1055/s-0033-1343794.
478. Kappos L, Radue EW, O'Connor P, et al.: A placebo-controlled trial of oral fingolimod in relapsing multiple sclerosis. *N Engl J Med.* 2010, 362:387-401. 10.1056/NEJMoa0909494.
479. Nolan R, Gelfand JM, Green AJ: Fingolimod treatment in multiple sclerosis leads to increased macular volume. *Neurology.* 2013, 80:139-44. 10.1212/WNL.0b013e31827b9132.
480. Haseloff RF, Blasig IE, Bauer HC, Bauer H: In search of the astrocytic factor(s) modulating blood-brain barrier functions in brain capillary endothelial cells in vitro. *Cell Mol Neurobiol.* 2005, 25:25-39.10.1007/s10571-004-1375-x.
481. Fukuoka H, Kojima K, Iwama A, Okumura T, Sotozono C: Fingolimod-associated severe bilateral cystoid macular edema. *Am J Ophthalmol Case Rep.* 2022, 26:101553. 10.1016/j.ajoc.2022.101553.
482. Afshar AR, Fernandes JK, Patel RD, Ksiazek SM, Sheth VS, Reder AT,

- Hariprasad SM: Cystoid macular edema associated with fingolimod use for multiple sclerosis. *JAMA Ophthalmol.* 2013, 131:103-7. 10.1001/jamaophthalmol.2013.570.
483. Cugati S, Chen CS, Lake S, Lee AW. Fingolimod and macular edema: Pathophysiology, diagnosis, and management. *Neurol Clin Pract.* 2014;4(5):402-9.
484. Norgaard TL, Andersen CU, Hilt C, Andersen CU. Macular oedema and changes in macular thickness in multiple sclerosis patients treated with fingolimod. *Basic Clin Pharmacol Toxicol.* 2020;126(6):492-7.
485. Husmann R, Davies JB, Ghannam M, Berry B, Kelkar P. Fingolimod-associated macular edema controlled with nepafenac non-steroidal anti-inflammatory ophthalmologic applications. *Clin Mol Allergy.* 2020;18:3.
486. Sonne SJ, Smith BT. Incidence of uveitis and macular edema among patients taking fingolimod 0.5 mg for multiple sclerosis. *J Ophthalmic Inflamm Infect.* 2020;10(1):24.
487. Kaiser-Kupfer, M.I.; Lippman, M.E. Tamoxifen retinopathy. *Cancer Treat. Rep.* 1978, 62, 315–320.
488. Toimela, T.; Salminen, L.; Tähti, H. Effects of Tamoxifen, Toremifene and Chloroquine on the Lysosomal Enzymes in Cultured Retinal Pigment Epithelial Cells. *Basic Clin. Pharmacol. Toxicol.* 1998, 83, 246–251.
489. Kaiser-Kupfer, M.I.; Lippman, M.E. Tamoxifen retinopathy. *Cancer Treat. Rep.* 1978, 62, 315–320. Vinding, T.; Nielsen, N.V. Retinopathy caused by treatment with tamoxifen in low dosage. *Acta Ophthalmol.* 2009, 61, 45–50.
490. Kim, H.-A.; Lee, S.; Eah, K.S.; Yoon, Y.H. Prevalence and Risk Factors of Tamoxifen Retinopathy. *Ophthalmology* 2019, 127, 555–557.
491. Crisóstomo, S.; Vieira, L.; Cardigos, J.; Fernandes, D.H.; Luís, M.E.; Nunes, S.; Morujão, I.; Anjos, R.; Flores, R.M.R.P. Tamoxifen-induced chorioretinal changes. *Retina* 2020, 40, 1185–1190.
492. Szabelska P., Paczwa K., Ciszewska J., Rozycki R. Gołebiewska J. Unilateral Tamoxifen-Induced Retinopathy as a Consequence of Breast Cancer Treatment—Multimodal Imaging Value. *Diagnostics* 2023, 13, 1250.
493. Harnois C, Cortin P, Samson J, Boudreault G, Malenfant M, Rousseau A. Static perimetry in canthaxanthin maculopathy. *Arch Ophthalmol Chic Ill* 1960. 1988;106(1):58-60.
494. Cortin P, Corriveau LA, Rousseau AP, Tardif Y, Malenfant M, Boudreault G: Maculopathie en paillettes d'or. *Can J Ophthalmol* 1982; 17: 103–106.
495. Sujak A. Interactions between canthaxanthin and lipid membranes—possible mechanisms of canthaxanthin toxicity. *Cell Mol Biol Lett.* 2009;14(3):395-410.
496. Mazze RI: Fluorinated anaesthetic nephrotoxicity: an update. *Can Anaesth Soc J* 1984; 31:16--22.
497. Meredith TA., Wright JD., Gammon JA., et al. Ocular involvement in pri-

- mary hyperoxaluria. *Arch Ophthalmol* 1984;102:584-587.
498. Novak MA, Roth AS, Levine MR. Calcium oxalate retinopathy associated with methoxyflurane abuse. *Retina Phila Pa.* 1988;8(4):230-236.
499. Conklin JD. The pharmacokinetics of nitrofurantoin and its related bioavailability. *Antibiot Chemother.* 1978;25:233-252.
500. Ibanez HE, Williams DF, Boniuk I. Crystalline retinopathy associated with long-term nitrofurantoin therapy. *Arch Ophthalmol Chic Ill* 1960. 1994;112(3):304-305.
501. Shah VA, Cassell M, Poulouse A, Sabates NR. Talc retinopathy. *Ophthalmology* 2008;115(4):755.
502. Murphy SB, Jackson WB, Pare JA. Talc retinopathy. *Can J Ophthalmol* 1978;13(3):152-156.
503. AtLee WE. Talc and cornstarch emboli in eyes of drug abusers. *JAMA* 1972;219(1):49-51.
504. Kresca LJ, Goldberg MF, Jampol LM. Talc emboli and retinal neovascularization in a drug abuser. *Am J Ophthalmol* 1979;87(3):334-339.
505. Brucker AJ. Disk and peripheral retinal neovascularization secondary to talc and cornstarch emboli. *Am J Ophthalmol.* 1979;88(5):864-867.
506. Borden EC, Parkinson D. A perspective on the clinical effectiveness and tolerance of interferon-alpha. *Semin Oncol.* 1998;25 Suppl 1):3-8.
507. Hayasaka S, Nagaki Y, Matsumoto M, Sato S. Interferon associated retinopathy. *Br J Ophthalmol.* 1998;82(3):323-325.
508. Lai CH, Yang YH, Chen PC, King YC, Liu CY. Retinal vascular complications associated with interferon-ribavirin therapy for chronic hepatitis C: A population-based study. *Pharmacoepidemiol Drug Saf.* 2018;27(2):191-198.
509. d'Alteroche L, Majzoub S, Lecuyer AI, Delplace MP, Bacq Y. Ophthalmologic side effects during alpha-interferon therapy for viral hepatitis. *J Hepatol.* 2006;44(1):56-61.
510. Tu KL, Bowyer J, Schofield K, Harding S. Severe interferon associated retinopathy. *Br J Ophthalmol.* 2003;87(2):247-248.
511. Nagaoka T, Sato E, Takahashi A, Yokohama S, Yoshida A. Retinal circulatory changes associated with interferon-induced retinopathy in patients with hepatitis C. *Invest Ophthalmol Vis Sci.* 2007;48(1):368-375.
512. Mellion BT, Ignarro LJ, Ohlstein EH, Pontecorvo EG, Hyman AL, Kadowitz PJ. Evidence for the inhibitory role of guanosine 3', 5'-monophosphate in ADP-induced human platelet aggregation in the presence of nitric oxide and related vasodilators. *Blood.* 1981;57(5):946-955.
513. Shelly W, Draper MW, Krishnan V, Wong M, Jaffe RB. Selective estrogen receptor modulators: An update on recent clinical findings. *Obstet Gynecol Surv.* 2008;63(3):163-181.
514. Olsen E, Duvic M, Frankel A, Kim Y, Martin A, Vonderheid E, et al. Pivotal phase III trial of two dose levels of denileukin diftiox for the treatment

- of cutaneous T-cell lymphoma. *J Clin Oncol*. 2001;19(2):376–388.
515. Ruddle JB, Harper CA, Honemann D, Seymour JF, Prince HM. A denileukin diftitox (Ontak) associated retinopathy? *Br J Ophthalmol*. 2006;90(8):1070–1071.
516. Takeuchi M, Keino H, Kezuka T, Usui M, Taguchi O. Immune responses to retinal self-antigens in CD25 (+) CD4(+) regulatory T-cell-depleted mice. *Invest Ophthalmol Vis Sci*. 2004;45(6):1879–1886.
517. Lubow M, Grzybowski DM, Awad H. Denileukin diftitox vision loss is not posterior ischemic optic neuropathy. *Leuk Lymphoma*. 2008;49(2):370–3.
518. Soushi S, Kobayashi F, Obazawa H, Kigasawa K, Shiraishi K, Itakura M, et al. Evaluation of risk factors of interferon-associated retinopathy in patients with type C chronic active hepatitis. *Nippon Ganka Gakkai Zasshi*. 1996;100(1):69–76.
519. Druker BJ, Guilhot F, O'Brien SG, Gathmann I, Kantarjian H, Gattermann N, et al. Five-year follow-up of patients receiving imatinib for chronic myeloid leukemia. *N Engl J Med*. 2006;355(23):2408–2417.
520. Saper JR, Silberstein S. Pharmacology of dihydroergotamine and evidence for efficacy and safety in migraine. *Headache* 2006;46(4):171–181.
521. Sheyman AT, Wald KJ, Pahk PJ, Freund KB. Gemcitabine associated retinopathy and Nephropathy. *Retin Cases Brief Rep* 2014;8:107–109.
522. Banach MJ, Williams GA. Purtscher retinopathy and necrotizing vasculitis with gemcitabine therapy. *Arch Ophthalmol*. 2000;118(5):726–7.
523. Batra S, Wadhwa J, Vaid AK, Sharma N. Old drugs: new complications. *BMJ Case Rep*. 2013;2013.
524. Shahab N, Haider S, Doll DC. Vascular toxicity of antineoplastic agents. *Semin Oncol* 2006;33:121–138.
525. Warren RP, Jr, Berman E. Phase I and II study of fludarabine phosphate in leukemia: therapeutic efficacy with delayed central nervous system toxicity. *J Clin Oncol*. 1986;4:74–9.
526. Warrell RP, Jr, Berman E. Phase I and II study of fludarabine phosphate in leukemia: therapeutic efficacy with delayed central nervous system toxicity. *J Clin Oncol*. 1986;4(1):74–9.
527. Spriggs DR, Stopa E, Mayer RJ, Schoene W, Kufe DW. Fludarabine phosphate (NSC 312878) infusions for the treatment of acute leukemia: phase I and neuropathological study. *Cancer Res*. 1986;46(11):5953–8.
528. Bishop RJ, Ding X, Heller CK, 3rd, Illei G, Caruso R, Cunningham D, et al. Rapid vision loss associated with fludarabine administration. *Retina*. 2010;30(8):1272–7.
529. Chee YL, Culligan DJ, Olson JA, Molyneaux P, Kurtz JB, Watson HG. Sight-threatening varicella zoster virus infection after fludarabine treatment. *Br J Haematol*. 2000;110(4):874–5.
530. Bos PM., Deutman AF. Acute macular neuroretinopathy. *Am J Ophthalmol*

- mol. 1975;80(4):573-584.
531. Turbeville SD, Cowan LD, Gass JM. Acute macular neuroretinopathy: a review of the literature. *Surv Ophthalmol.* 2003;48(1):1-11.
532. Vessey MP, Hannaford P, Mant J, Painter R, Frith P, Chappel D. Oral contraception and eye disease: findings in two large cohort studies. *Br J Ophthalmol.* 1998;82(5):538-42.
533. Song D, Nadelmann J, Yu Y, VanderBeek BL. Association of retinal vascular occlusion with women filling a prescription for female hormone therapy. *JAMA ophthalmology.* 2021;139(1):42-8.
534. Shanti, C.M., Lucas, C.E., 2003. Cocaine and the critical care challenge. *Crit Care Med* 31(6), 1851-1859.
535. Ren, H., Du, C., Yuan, Z., Park, K., Volkow, N.D., Pan, Y., 2012. Cocaine-induced cortical microischemia in the rodent brain: clinical implications. *Mol Psychiatry* 17(10),1017-1025.
536. Chow, C.C., Shah, R.J., Lim, J.I., Chau, F.Y., Hallak, J.A., Vajaranant, T.S., 2013. Peripapillary retinal nerve fiber layer thickness in sickle-cell hemoglobinopathies using spectral-domain optical coherence tomography. *Am J Ophthalmol* 155(3), 456-464 e452.
537. Introini, U., Casalino, G., Querques, G., Bagini, M., Bandello, F., 2015. Acute macular neuroretinopathy following intranasal use of cocaine. *Acta Ophthalmol* 93(3), e239-240.
538. Kannan B, Balaji V, Kummararaj S, Govindarajan K. Cilioretinal artery occlusion following intranasal cocaine insufflations. *Indian Journal of Ophthalmology.* 2011;59(5):388.