





BRIEF COMMUNICATION

OPEN



Telemedicine screening for syphilitic chorioretinitis in the SUNDROP cohort

Moosa H. Zaidi ¹, Tatiana R. Rosenblatt¹, Ahmad Al-Moujahed¹, Daniel Vail¹, Natalia F. Callaway ¹, Quan Dong Nguyen ¹✉ and Darius M. Moshfeghi ¹

© The Author(s) 2022

Eye (2022) 36:2214–2215; <https://doi.org/10.1038/s41433-022-01967-x>

INTRODUCTION

Chorioretinitis is a serious ocular complication of congenital syphilis (CS) that can cause permanent vision loss. While antibiotic use and public awareness have helped dramatically reduce the incidence of syphilis in the twentieth century, the US incidence of syphilis has more than tripled from 2000 to 2018 [1, 2]. Although the preponderance of syphilitic infections during this period have been in males, the incidence of primary and secondary syphilis in females has also risen from 1.7 per 100,000 in 2000 to 3.0 per 100,000 in 2018. In parallel, the incidence of CS has risen from 14.1 per 100,000 births in 2000 to 32.8 per 100,000 births in 2018 [2]. These trends raise a concern about the incidence of congenital syphilitic chorioretinitis. Yet, to the authors' knowledge, no recent studies have examined this incidence.

METHODS

The Stanford University Network for Diagnosis of Retinopathy of Prematurity (SUNDROP) study is a telemedicine screening platform for retinopathy of prematurity (ROP) used by member hospitals that lack access to quaternary pediatric retina specialists. The SUNDROP platform has been used in expanded indications beyond ROP to provide hospitals with pediatric retinal screening including the transmission of retinal images in infants with known or suspected CS. We retrospectively analyzed the SUNDROP database to examine a more recent incidence of chorioretinitis among cases of CS. This index study was conducted in accordance with the Health Insurance Portability and Accountability Act and the tenets of the Declaration of Helsinki and with local approval of the Institutional Board Review (IRB 8572).

RESULTS

Thirty-seven confirmed and seven probable cases of CS were identified from 2015 to 2020 following Centers for Disease Control case definitions [3]. An additional 17 cases of rapid plasma reagin (RPR) positivity alone were also identified. Across all 61 of these cases, no evidence of chorioretinitis was found based on fundus photographic findings. The overall sex distribution was 44.3% female, including 40.5% of confirmed CS cases, 28.6% of probable CS cases, and 90.9% of positive RPR titer-only cases.

DISCUSSION

These preliminary findings suggest that even as the incidences of CS have risen, chorioretinitis remains a rare complication.

While these results are specific to CS in neonates, they are consistent with a recent study that found hospital admissions for syphilitic uveitis have not increased despite a growing incidence of admissions for syphilis [4]. Although every case of CS results from inadequate maternal treatment, it may be that late or partial maternal treatment results in milder cases of CS with a lower incidence of chorioretinitis than cases resulting from no maternal treatment. Indeed, the most recent prior study of the incidence of chorioretinitis in CS conducted in 1953 noted that chorioretinitis, as well as other symptoms signs such as dacryocystitis and Hutchinson triad, appeared to have become rarer and less severe in CS [5]. Thus, the low incidence of chorioretinitis presently observed may reflect both its rarity in the natural history of CS and the effect of partial maternal treatment.

REFERENCES

- Cooper JM, Sánchez PJ. Congenital syphilis. *Semin Perinatol*. 2018;42:176–84. <https://doi.org/10.1053/j.semperi.2018.02.005>.
- AtlasPlus – Tables. Centers for Disease Control and Prevention. <https://gis.cdc.gov/grasp/nchhstpatlas/tables.htm>. Accessed July 2021.
- STD Surveillance Case Definitions. Centers for Disease Control and Prevention. <http://www.cdc.gov/std/stats/CaseDefinitions-2014.pdf>. Accessed July 2021.
- Albini T, Callaway NF, Pershing S, Wang SK, Moshfeghi AA, Moshfeghi DM. Trends in hospitalization and incidence rate for syphilitic uveitis in the United States from 1998 to 2009. *Am J Ophthalmol*. 2017;180:133–41.
- Klauder JV, Meyer GP. Chorioretinitis of congenital syphilis. *AMA Arch Ophthalmol*. 1953;49:139–57.

AUTHOR CONTRIBUTIONS

DMM conceptualized and designed the study, acquired and interpreted the data, and critically revised the manuscript for important intellectual content. QDN conceptualized and designed the study, interpreted the data, and critically revised the manuscript for important intellectual content. MHZ analyzed and interpreted the data, drafted the initial manuscript, and revised the manuscript. AA-M, DV, and NFC acquired and interpreted the data and revised the manuscript for important intellectual content. All authors approved the final manuscript and submitted and agree to be accountable for all aspects of the work.

FUNDING

This work was funded by Research to Prevent Blindness, Inc. and the National Eye Institute (P30-EY026877).

¹Byers Eye Institute, Stanford University School of Medicine, Palo Alto, CA, USA. ✉email: ndquan@stanford.edu

Received: 18 January 2022 Revised: 2 February 2022 Accepted: 2 February 2022

Published online: 25 February 2022

COMPETING INTERESTS

DMM reported serving as a consultant for Akceso Advisors AG, Alcon, Alexion, CMEOutfitters.com, Congruence Medical Solutions, M3 Global Research, Northwell Health, Novartis Pharmaceuticals, Inc, Ocular Surgery News, Praxis UNS, Inc, Prime Medical Education, Retina Today/Pentavision, Shapiro Law Group, SLACK, Inc, University of Miami, and Vindico; serving as a principal investigator for Apellis and Regeneron; being a founder of dSenz, Inc, Linc, Placid0, Inc, Pr3vent, Promisight, Inc, and Versl, Inc; holding equity in 1800Contacts, dSenz Inc, Grand Legend Technology, Ltd, Linc, Placid0, Inc, Pr3vent, Promisight, Inc, Pykus, Versl, Inc, and Visunex; serving on the board of directors of 1800Contacts, dSenz Inc, Linc, Placid0, Inc, Pr3vent, and Promisight, Inc; serving on the scientific advisory board of Akebia, Allegro, Clinical Trials Resource Group, Irenix, Pykus, and Visunex; serving as a steering committee member of Bayer Pharma AG, Iconic Therapeutics, and Regeneron; serving on a drug safety monitoring board for Novartis Pharmaceuticals, Inc, receiving grant support from Genentech, Research to Prevent Blindness, Inc, and NEI P30-EY026877; and receiving speaking honoraria from VRS. NFC reported serving as a consultant for Genentech, holding equity in Genentech, and employment by Genentech. The other authors have no conflicts of interest to disclose.

ADDITIONAL INFORMATION

Correspondence and requests for materials should be addressed to Quan Dong Nguyen.

Reprints and permission information is available at <http://www.nature.com/reprints>

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

© The Author(s) 2022