Yaws: An Introduction

The year 2012 saw the relaunch of an old campaign, led by the World Health Organization (WHO) to eradicate the neglected tropical disease known as ‘Yaws.’ Yaws, historically found in humid tropical regions, is an infectious multi-stage disease caused by the Organism Treponema pallidum pertenue (T. pretenue), a bacterium almost identical to the organism which causes syphilis. Transmission occurs through skin-to-skin contact of a nonsexual nature and is often found in children who spread the disease agent during play. The WHO has classified yaws as one of 17 neglected tropical disease and known to disproportionately affect economically disadvantaged populations and rural communities.

The median time from inoculation and the appearance of a primary yaws lesion is about 21 days, though it has been known to take as long as 90 days. In humans, the primary yaws lesion usually appears in the skin of the leg and ankle sometimes presenting on the arm, hand, or buttocks. In baboons the lesions have been associated with the skin of the buttocks, genital and inguinal areas; suspicion of facial lesions have been described in Gorillas. After about 3 to 6 months, the primary yaws will resolve but if not treated with appropriate antibiotic medications the disease agent will proceed to enter its second and intermediate stage via hematogenes and lymphatic dissemination. The secondary stage of yaws is characterized by scaling of the skin and plaques of the palms which often present with arthralgia and malaise. If yet still untreated the disease will progress to its final and chronic stage of relapsing illness displayed as dactylitis, deformities of long bones in the extremities and irreversibly damaging ulceration of the palate and nasopharynx.

Yaws was the first disease targeted for eradication by the World health council and the United Nations Children’s fund in the 1950’s resulting in a 95% decrease globally. The current WHO strategy towards the goal of global yaws eradication was formulated in 2012 and is biased on recent and successful campaigns in India and Ecuador.

Discussion

Though the goal of global eradication of yaws by 2020 is admirable, it is also impractical; there are many factors which will likely cause the current campaign to fail. As of 2016 an appropriate dosage of azithromycin for the treatment of yaws is not firmly established. There is also a lack of global epidemiological information with most cases reported to the WHO by the various health departments from each country. The lack of baseline numbers paired with no long-term plans for active surveillance leaves one staring their head. There is also the possibility of resistance to azithromycin which has occurred in the treatment of syphilis which is extremely closely related to yaws and thus serves as a strong predictor of the eventuality. Recent publications have confirmed longstanding suspicions flies might act as a vector for the spread of yaws.

Lastly and most importantly one of the standards for slating a disease agent for eradication is lack of a nonhuman animal reservoir. This has been confirmed through carefully looked over and simply ignored. Reports of yaws like lesions have been reported for over a decade in various great ape populations and reports of serologically and PCR confirmed yaws have been published.

Non Human Primates

Cases in Non Human Primates

Total Number of Cases Reported to the World Health Organization 2008-2013

This map displays the total number of persons with a history of residence in an endemic areas (past or present) who presented with clinically active (visible) yaws.

Acknowledgements

An extremely special thanks goes to Carolyn Talmadge whose patience, knowledge and expertise when all tested to their limits during the course of this project. I would also like to thank to my mentors, Dr. Christopher Whitter for turning me on to the topic and Dr. Alison Rubins who has been an unshakable pillar of support. Of course a special shout out goes to the MCM ‘17ers whom I hope to work with and in support of for the rest of our lives. Thank you.

Data Sources & Cartographer Info

Cartographer information: Adam Krantz
Data Produced: 15 December 2016
Course: GIS for Conservation Medicine MCM 591
Projection: Mollweide, Mercator and Robinson
Data was taken from the International Union for Conservation of Nature (IUCN), the World Health Organization (WHO), and the United Nations Children’s Fund (UNICEF)

Yaws: Eradication by 2020 - A Possible Failure?

Non Human Primates Role in the Global Eradication of a Neglected Tropical Disease