Handbook of Endemic Treponematoses: Yaws, Endemic Syphilis, and Pinta

Peter L. Perine and **Donald R. Hopkins**
International Health Programs Office, Centers for Disease Control, Atlanta, GA, USA

Ronald K. St. John
Pan American Health Organization Washington, DC, USA

Paul L. A. Niemel
Dermatologic Service Paramaribo, Suriname

Georges Causse and **G. M. Antal**
World Health Organization Geneva, Switzerland

World Health Organization
Geneva
1984

ISBN 92 4 154176 8

TYPESET IN INDIA
PRINTED IN ENGLAND
83/5965–Macmillan/Spottiswoode/Vitesse–8500

Contents

Preface

In spite of a considerable decrease in the prevalence of yaws, endemic syphilis, and pinta as a result of WHO/UNICEF-sponsored national control campaigns during the 1950s and 1960s, these diseases are still endemic in many parts of the world. They are usually found in remote, rural populations that have little or no access to health care and among whom the large-scale treatment activities that are needed are the most difficult to apply. In addition, constant surveillance and active case-finding and case-reporting are essential to the success of control work; these are activities that may be performed by locally-based community health workers, with support and guidance from health services at the district and national levels.

This handbook is intended to be a reference source for health care workers and public health personnel throughout the tropical and subtropical world whose duties include the diagnosis, treatment, and prevention of yaws, endemic syphilis (bejel), and pinta. It is not a comprehensive essay on the biology of the treponemes and does not discuss the pathology of these diseases in detail. It describes briefly the clinical manifestations of each disease, supplementing each description with colour photographs of characteristic lesions. The treatment of the endemic treponematoses is described, with emphasis on the epidemiological methods used to control these diseases. This information should enable health workers to make a correct diagnosis, give the proper treatment, and control (or even eliminate) treponematoses in the population they serve.

CHAPTER 1

Characteristics and history of the endemic treponematoses

Introduction

The endemic treponematoses—yaws, endemic syphilis (bejel), and pinta—are a group of chronic bacterial infections caused by treponemes. These organisms belong to the family Treponemataceae[1] and the genus *Treponema*. The agents of yaws, endemic syphilis, and pinta are *T. pertenue*, *T. pallidum*, and "*T. carateum*" (invalid)[2], respectively. Man is their only natural host.

Characteristics of treponemes

The treponemes that cause yaws, endemic syphilis, and pinta have identical morphology. Because of their small size and mass, they cannot be seen with an ordinary microscope unless a dark-field condenser is used. They look like thin, silver threads coiled like a corkscrew, and move with a characteristic rapid spinning motion.

The agent of venereal syphilis, also called *T. pallidum*, is identical in almost all respects to the organism that causes endemic syphilis. The difference is that late cardiovascular, neurological, and visceral complications are found with much greater frequency in venereal syphilis than in endemic syphilis. Thus, endemic syphilis is clinically similar to venereal syphilis, but epidemiologically is more closely related to yaws (Table 1).

There are a large number of non-pathogenic species of *Treponema* that are normally present in the mouth and intestinal and genitourinary tracts of man. These organisms are opportunistic pathogens and can stimulate the formation of antibodies that cross-react with the pathogenic treponemes of yaws, endemic syphilis, and pinta. While the avirulent treponemes can be cultured, the pathogenic treponemes do not grow *in*

[1] The other members of the Treponemataceae are *Borrelia* and *Leptospira*, which cause relapsing fever and leptospirosis, respectively.

[2] Bacterial names appearing in quotation marks in the text have no standing in nomenclature since they have not been validated by the International Committee on Systematic Bacteriology.

Table 1. Epidemiological characteristics of treponemal diseases

Epidemiological characteristic	Treponemal disease			
	Venereal syphilis	Endemic syphilis	Yaws	Pinta
Occurrence	sporadic, urban	endemic, rural	endemic, rural	endemic, rural
Geographical distribution	worldwide	South-west Asia, sub-Saharan regions of Africa, Bosnia	Africa, south-east Asia, Western Pacific, South America, Caribbean	Central and South America, Mexico,
Climate in which the disease mostly occurs	all types	arid, warm	humid, warm	semi-arid, warm
Age group with peak incidence (years)	18–30	2–10	2–10	15–30
Transmissibility	high	high	high	low
Mode of transmission:				
Direct (person to person)				
Sexual	usual	no	no	no
Non-sexual	rare	yes	usual	probable
Indirect				
Utensils	rare	usual	rare	unknown
Contaminated fingers	unknown	unknown	probably frequent	unknown
Congenital	occasional	unknown	no	no
Reservoir of infection	adults	children 2–15 years old; contacts in home, school and village; latent cases capable of becoming active	children 2–15 years old; contacts in home, school and village; latent cases capable of becoming active	cases with long-standing skin lesions

vitro. *T. pallidum* and *T. pertenue* are maintained in the laboratory by infecting laboratory animals or by freezing the organisms (at −70 °C or below) in infected tissue or in special solutions.

The treponemes of yaws, pinta, and the different types of syphilis are