

## EPIDEMIOLOGY

*Chairman:* Fred L. Soper, M.D., Director, Pakistan-SEATO Cholera Research Laboratory, Dacca, East Pakistan

*Rapporteur:* J. L. Stockard, M.D., Deputy Director, Pakistan-SEATO Cholera Research Laboratory, Dacca, East Pakistan

This century has seen a great reduction in the geographical distribution of cholera in the world in comparison with that of the preceding one. No invasion of the Americas has occurred since 1900 and during the past 30 years and even since World War II, cholera has receded from the Pacific. The only notable spread of cholera in recent years to a non-contiguous area, was a short-lived invasion of Egypt in 1947.

The first decade of the second half century began with a minimal recognized distribution of cholera; both West Pakistan and Thailand which had outbreaks in late 1940's were free from 1950 to 1958. However, in the past 3 years, 1958 to 1960, cholera has shown a capacity for expansion and 1960 finds outbreaks recorded in many parts of India, in East Pakistan, in Burma, in Nepal, in West Pakistan and in Afghanistan. Classical clinical cholera apparently disappeared from Thailand in 1959 during the second year of an epidemic first noted in May 1958.

The generally accepted concept of the epidemiology of cholera is that East Pakistan and a contiguous area of India together constitute the permanent endemic focus where the infection is always found and from which it tends to spread more or less widely each year as circumstance permits. The health authorities of Thailand were alerted to the increased threat of invasion by cholera early in 1958 by reports of increased activity of the disease in Calcutta.

The story of the recent epidemic in Thailand is a fascinating one superimposed on a history of practically constant endemicity from 1916 to 1949 (with marked epidemic waves 1919 to 1920, 1925 to 1929, 1935 to 1937, and 1943 to 1947) followed by a total absence of observed cases from 1950 to May 1958 when the recent outbreak began. This outbreak was characterized by great rapidity of spread to some 38 provinces of the country in a few weeks and a rapid decline following the onset of the heavy monsoons but with a considerable recrudescence in 1959. On the basis of clinical observation it has been assumed that the cholera outbreak in Bangkok terminated in October of 1959. Continuing bacteriological studies have resulted in the report of continued isolation of the *Vibrio cholerae* from certain diarrheal cases and from the environment until the summer of 1960. The epidemiological significance of this report is not clear.

West Pakistan is not part of the endemic cholera focus. It suffered a serious outbreak during the troubled period of national independence, 1947-1949, but was then free until November of 1958 when the disease was observed in a few towns not far from the Indian frontier. After a quiet period in 1959 the disease reestablished itself in West Pakistan in May of 1960 apparently imported from the port of Bombay. The spread of the infection has been attributed to both water and food and the epidemic still continues in certain areas as of November 1960.

Unfortunately details are not available of the outbreaks of cholera reported in 1960 from Afghanistan, Nepal and Burma.

The many gaps in our knowledge of the epidemiology of cholera in its permanent endemic seedbed and in such widely varying epidemic conditions as are to be found in Thailand and in West Pakistan only tend to emphasize the need for a careful restudy and evaluation of all existing knowledge of this ancient disease. The organism itself, *Vibrio cholera*, its biology, *in vivo*, *in vitro* and its ability to persist under natural conditions must all be reexamined. How does the cholera vibrio vary in nature and what are the factors which cause it to become avirulent? To recover its virulence (if it does)? Other points needing careful study are immunity, vaccination, susceptibility, inter-epidemic foci, the effect of the habits of the people, the climate, the environment and the salinity of contaminated waters. What are the factors which permit the natural resolution or involution and disappearance of the infection responsible for epidemics?

Do East Pakistan and parts of India constitute a permanent endemic focus of cholera because the natural conditions there permit the persistence of the cholera vibrio in contaminated waters throughout the year? Will improved water supplies and sanitation alone be sufficient to end cholera in these endemic areas?

The data presented on reported cases of cholera in East Pakistan for the past decade, averaging almost 18,000 annually, establishes beyond doubt the wisdom of locating the SEATO Cholera Research Laboratory in this area. It must be remembered, however, that it is not sufficient to study a communicable disease only in the endemic area where it is known to exist.

The experience with yellow fever in the Americas is most significant on this point: A survey of the geographical distribution of immunity to yellow fever and the systematic collection and routine examination of post-mortem material from individuals dying after any rapidly fatal febrile illness resulted in the revelation of two unrecognized mechanisms for the maintenance of the yellow fever virus: a) silent yellow fever endemicity in Northeast Brazil based on an uncommon close association of man and the domestic mosquito vector, *Aedes aegypti*, in rural areas and b) yellow fever of forest primates transmitted by mosquito vectors other than *Aedes aegypti*.

It is important that studies continue in Thailand, now that cholera is apparently absent, and that West Pakistan be studied as another area where conditions are quite different from those in East Pakistan. Although the cholera research laboratory is located in Dacca, it is not intended that studies should be concentrated here, but rather that Dacca may serve as the center from which the disease may be studied in this region.

In considering the adequacy of quarantine regulations for the prevention of the international dissemination of cholera it should be remembered that any

regulation capable of preventing absolutely the movement of cholera from one area to another, particularly across extensive land frontiers, would for all practical purposes interrupt the movement of normal traffic and commerce from country to country. Countries as intimately related as are East and West Pakistan and India, Burma, and Thailand will always find it difficult to apply quarantine measures even though there might be developed an efficient cholera vaccine. Cholera represents par excellence the type of communicable disease which must be prevented and eradicated in its permanent foci of infection rather than contained by building airtight quarantine walls about these foci for the protection of the rest of the world.

A renewed faith in the reliability of the agglutination test performed with freshly cultured vibrios opens the way to geographical studies of the previous distribution of cholera by laboratory methods without depending on the notification of clinical cases. A better understanding of the true epidemiology of cholera can be expected to arise from the routine study of this disease in different areas over a considerable period of time.

It is only as more knowledge based on observation in the laboratory and in the field becomes available that a reasonable program for cholera control and eventual eradication in its endemic foci can be prepared.

# SEATO CONFERENCE ON CHOLERA



WC 262  
C748c  
1960  
cop.6

E. Pakistan

December 5-8, 1960

ICDDR,B LIBRARY  
DHAKA 1212

3623

MO4901

# CONFERENCE ON CHOLERA

Papers Presented and Summaries of Discussions



*Sponsored by:*

The South-East Asia Treaty Organization

*and*

National Institutes of Health

U. S. Public Health Service

East Pakistan Assembly House,  
Dacca, East Pakistan  
December 5-8, 1960

*Conference Director:* Lt. Col. M.M. Haque

ICDDR,B LIBRARY  
DHAKA 1212

A-038305