TROPICAL HEALTH: A GLOBAL CHALLENGE

Refaat Kamel
Ain Shams University, Egypt.

Keywords: Tropical Surgery, Schistosomiasis, HIV, Malaria, Leprosy, Echinococosis, Cysticercosis, Global warming, low cost

Contents

Summary

Tropical diseases present a global challenge. Whereas trauma is taking on epidemic proportions, infection remains the leading cause of death and disability worldwide. Although many organisms have their origins in Central Africa, South America and Asia, human interference with their environment has extended their natural habitat. Many factors have contributed to the changing world ecology. They include civil wars, population movement, deforestation, global warming and the ease of international travel. These changes are against a backdrop of a progressive increase in the world population, to an estimated 8.6 billion by 2030, this being particularly concentrated in tropical regions.

The control of infection is just one element of these apparent insoluble equations and must start with a better identification and monitoring of these diseases. More effective identification tools are needed for HIV, malaria, drug resistant T.B. MERSA (Methacillin Resistant Staphylococcus Aureus) and many other endemic tropical diseases. These must be rapid, robust, reliable and reproducible. Monitoring disease requires better markers and more effective surveillance techniques, with more extensive use of the skills developed in global informatics. Wide epidemiologic and demographic studies are a pre-requisite.

Control of tropical diseases is markedly influenced by public health measures, including

vaccination programs and appropriate medication. The problems of organism resistance and the need for cheaper drugs are widespread.

Surgery has a substantial role in alleviating tropical diseases, but the shortage of anesthetists and facilities across the tropics means this is only sporadically delivered. The widespread development of training programs is urgently required.

Correction of the socioeconomic imbalance is unlikely to come from further external political initiatives and rhetoric, where support is usually financial, frequently based on political gain and often diluted or diverted from the target population. Change must come from within the country, fostered by education and the understanding of problems, and the introduction of democratic peaceful development and solutions. Outside help must foster local initiatives. Although individuals need to travel to gain experience and expertise, it is essential that these professionals return, while retaining their international links Global international networks of understanding should he built redressing socioeconomic imbalance, working towards a more equitable distribution of wealth and curtailing the current devastation of disease across the tropics.

1. Introduction

The tropics resting between 23º north of the equator (Tropic of Cancer) and 23º south of the equator (Tropic of Capricorn). The area adjacent to tropical area up to 35º on each side is considered as subtropical area. The tropical area includes many of the nature's extremes, the world's highest glaciers and, of more relevance to tropical diseases, the highest rainfall, temperature and humidity which enhance the establishment, spread and severity of many infectious diseases.

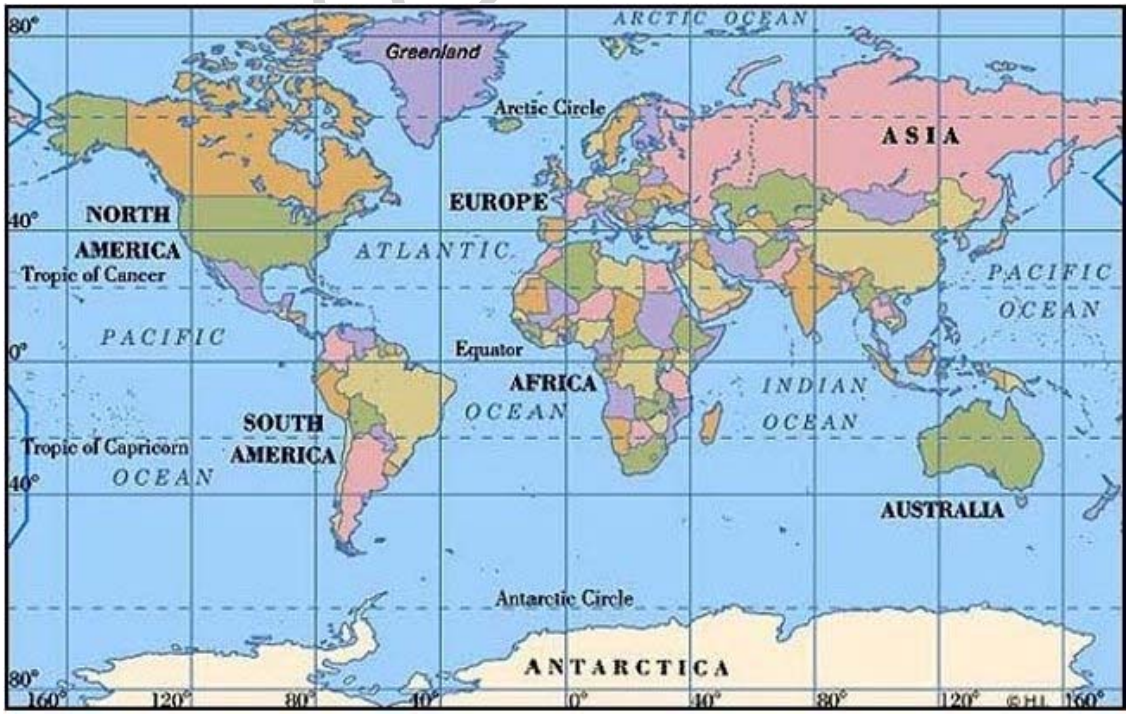

Figure 1: World Map showing the tropical and subtropical areas.

The majority of the world's population lives in the tropics. Living standards, as with many features in the region, demonstrate the extremes of poverty, wealth, income, social status and health, these being further influenced by politics and religion.

In many tropical countries, communities rely on traditional medicine and there is little or no primary health care available. Also, there is a widespread lack of trained surgeons and anesthetists throughout the tropics. This is particularly so in remote urban areas of Africa, where one doctor, working alongside care assistants and providers of traditional medicine, may serve a population of a quarter of a million, and may have to undertake some operative procedures with minimal training.

The special diseases were unknown in the West until the World War II; River Blindness (onchocerciasis) was thought a rare and unimportant disease. Since then, it has emerged as one of the world's great public health problems, afflicting an estimated 17.7 million people of whom an estimated 270,000 are blind and another 500,000 have visual impairment. So, these diseases are not only common but considered as dilemmas in so many parts of the World.

2. Medical Conditions in the Tropics

Many conditions, such as hernias, appendicitis, acute abdomens, hydroceles, goitres and tumors of the breast and skin, are very familiar but the severity of these lesions is remarkable. Obstetric problems, possibly being managed by the general surgeon, are often life threatening.

2.1. Infections

Global warming also is part of the multifactorial climatic changes supporting the spread of tropical diseases: distant exotic varieties can suddenly become local outbreaks and potential pandemic, as, the avian flu which originates in countries of the Far East and spreads later to Europe and America.

The main tropical diseases are H.I.V, Malaria and T.B.; they are attracting the big nations and the big sponsors to help in their control. They have been here since ancient times as evidenced by paleopathological studies.

The size of the parasitic problem within the tropics is astonishing. Not all parasites are of **surgical significance**, but their varied presentation means that many have been considered in surgical differential diagnosis. Malaria is a prime example in that it can mimic most diseases in its presentation; 40% of the world population is at risk and there are an estimated 500 million cases with more than one million deaths each year.

Schistosomiasis affects about 200 millions of people allover the World and 600 millions are at risk.. River Blindness (onchocerciasis) affects 17.7 million; 120 million are at risk with 270,000 blind / year.

Human **lymphatic filariasis** affects 120 million people worldwide with 1 billion people

at risk in more than 80 countries. It is estimated that almost 2 billion people are infected with one or more of the **Soil-Transmitted Helminthes**, accounting for up to 40% of the global morbidity from infectious diseases, exclusive of malaria.

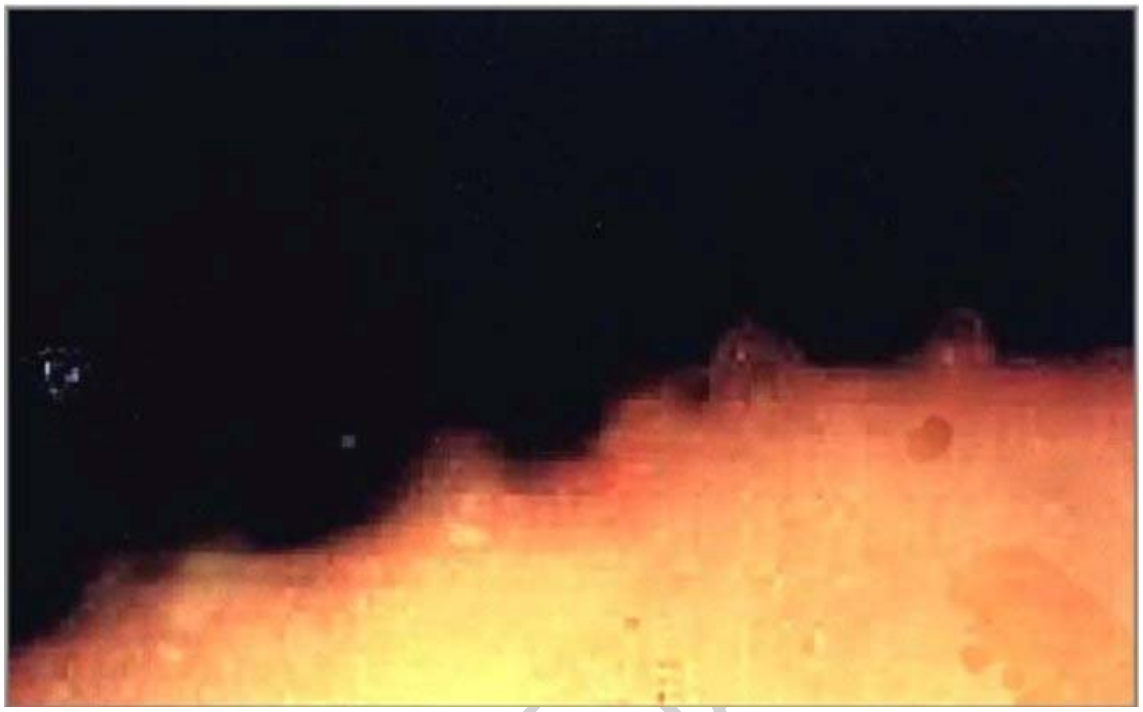

Figure 2: *Schistosoma mansoni* worm recovered from a patient with *Salmonella* infection showing the colonies of *Salmonella* within the cuticle of the worm stained with antiserum to *Salmonella paratyphi* A and fluorescein labelled conjugate. Shistosomiasis as the vehicle of salmonella infection. Transactions of the Royal Society of tropical medicine & Hygiene. Stuart Young, Gene Hagashi Refaat Kamel et al

According to official reports received from 109 countries and territories, the global registered prevalence of **leprosy** at the beginning of 2007 stood at 224,717 cases, while the number of new cases detected during 2006 was 259,017 (excluding the small number of cases in Europe). The number of new cases detected globally has fallen by more than 40,019 cases (a 13.4% decrease) during 2006 compared with 2005. During the past five years, the global number of new cases detected has continued to decrease dramatically, at an average rate of nearly 20% per year.

Globally, almost 57 million Disability-Adjusted Life Years (DALYs) are lost to Sexually Transmitted Diseases (STDs). Prevention and management of STDs have improved over the past two decades, but large differences in the epidemiology of STIs between the developed and developing countries persist. Incidence and prevalence rates are higher in both urban and rural populations in developing countries than in developed settings. Because diagnosis and treatment of STIs are often delayed or inadequate in developing countries, rates of complications can also be high).

HIV in humans is one of the most destructive pandemics in recorded history. As of January 2006, the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the

World Health Organization. The WHO, 2006 estimates that, AIDS has killed more than 25 million people since it was first recognized on December 1, 1981. A third of these deaths are occurring in sub-Saharan Africa, retarding economic growth and increasing poverty. The UNAIDS, reports that in 2003, over one million people were newly infected with HIV in Asia and the Pacific, bringing the total number of people living with HIV/AIDS in the region to 7.4 millions. At the end of 2003, as many as 4.58 million Indians were living with HIV/AIDS.

Other Champions of tropical affection includes malaria. Malaria exerts the heaviest toll in terms of death and suffering. 300 – 500 million persons are infected, of whom over 20 million will die during the present decade. In Africa alone, every hour of the day 120 children aged less than 5 years die from malaria. About 40% of the world's population is at risk.

People who are working in health care policy should be very aware of the vectors in various countries, e.g. Yellow fever is transmitted by *Aedes egypti* mosquito which is common in some tropical areas of Africa and the Americas. These lie within a band ranging from 15°N to 10°S of the equator. In the Americas, yellow fever is endemic in ten South American countries and in several Caribbean islands. Bolivia, Brazil, Colombia, Ecuador and Peru are considered at greatest risk. Infection causes a wide spectrum of disease, from mild symptoms to severe illness and death. The number of epidemics, and the number of people infected with yellow fever have increased over the last two decades, and yellow fever is now a serious public health problem

-
-
-

Bibliography

Adam D (2005): *Does global warming kill 150,000 people a year*? The Guardian, Article history. [The chapter deals with effect of climate changes and global warming on the morbidity and mortality rate of the world population]

Bundy DAP (1995): Epidemiology and transmission of intestinal helminthes, in: Farthing, M.J.G., Keusch, G.T & Wakelin, D (Eds.), *Enteric Infection 2, Intestinal Helminths*, Chapman & Hall Medical,:5-24.[the chapter deals with epidemiology of intestinal helminthes in children].

Donovan, B. (2004): *Sexually Transmissible Infections Other Than HIV*. Lancet 363 (9408): 545-56. .[the subject deals with the Sexually transmitted infections (STIs) that are notable for their fastidious requirements for transmission and growth].

Inadequate water Supply and Sanitation in: Developing Countries, Issues in forum**.** Water Encyclopedia, www.waterencyclopedia.com (Figure3).

Kamel R and Lumley J (2004): *Textbook of Tropical Surgery*, edited by Refaat Kamel and John Lumley, Published by Westminster publishing Ltd, London-UK. [This chapter deals with the principles of tropical

surgery]

Michael Jay Friedman: A book that Changed a Nation. In: Silent Spring Book, first edition, www.planning.nps.gov/wilderness/idea61.cfm

PhRMA, *Pharmaceutical Industry Profile 2004*. Global industry figures are for PhRMA member companies. [This subjects deals with the pharmaceutical industry that spends billions of dollars each year developing drugs to fight disease]**.**

Scudder, T. (1994): "Recent Experiences with River Basin Development in the Tropics and Subtropics." Natural Resources Forum 18, no. 2 101–113.

World Health Organization Report (2008) on *Global Surveillance of Epidemic-prone Infectious Diseases - Yellow fever.*

World Health Organization Report (2008): *Leprosy today.*

Young, SW, Higashi G., Kamel R., El-Abdin A.Z. and Mikhail I.A (1973): INTERACTION OF SALMONELLA AND SCHISTOSOMES IN HOST-PARASITE RELATIONS. Transactions of the Royal Society of Tropical Medicine and hygiene, Vol. 67 No. 6 pp.797-802. **(**Figure 2)

Biographical Sketch

Dr. Refaat Kamel, born in Tanta, Egypt 1925, is a medical graduate, from Cairo University. He pursued his postgraduate studies and training in Kasr Al-Eini, Cairo University, Egypt and many other countries like UK and USA. He was appointed in the Anatomy Department, Ain Shams University as instructor 1955-1959, Lecturer at Surgery Department 1959-1964, Assistant professor of Surgery 1964-1972. He was appointed as Professor of Surgery in 1972.

Other positions:
- World President of International College of Surgeons (ICS) 1990-1992.
- Member of National Council of Egypt (Health and Population) 1985
- Consultant in Rescue affairs of Arab Ministers of Health 1977
- Visiting Professor in Libya Sudan, Iraq, USA, Sweden and Denmark.
- Founder of the Global Academy of Tropical Health 2004

During his academic career, he published 7 books, supervised on 500 theses and published 100 papers in National and International Journals.

Membership in Societies: Prof. Kamel is:
- Founding member and Secretary General of the Egyptian Society of Hepatology, 1978.
- Corresponding member of Society of Surgeon Anatomists.
- Member of Executive Council of Egyptian American Friendship.
- Member of Editorial Board of Medical Journals, USA and other countries
- One of the 65 Caring Physicians of the World (World Medical Association WMA, www.wma.net)