

## Editorial



### Tropical Fever — Tropical or Global Challenge ?

Tropical fever means fever due to infections which are more prevalent in tropics and subtropics. Characteristics of weather of the Tropics consists of excess of rainfall, prolonged summer, higher average temperature through out year, higher humidity, presence of rain forest with rich biodiversity – making ecology of tropics favorable for proliferation and survival of different organisms, vectors and living creatures. Unfortunately most of the poor countries are in tropics – having less nutrition, health care, education and hygiene. So in one hand there is emergence and proliferation of organisms and other hand, lesser preventive and curative medical care with huge population burden – putting challenges in diagnosis and treatment of Tropical fever. Infections in tropics have more overlapping clinical features, atypical clinical presentations, diagnostic dilemma, quickly changing clinical profile, concomitant infections - posing challenges to physicians.

Disease of tropics and subtropics have been known from the ancient period of Roman and Egyptian Civilization. Molecular analysis of the “Mummies” revealed the presence of malarial antigen. Tropical diseases drew attention in 19<sup>th</sup> century when Europeans due to exploration and colonial expansion moved to tropical countries like Asia including India, Latin America, Africa. They suffered from fever due to different tropical infections. Research and discovery of drugs started actually for the need of rulers of tropical countries. One of the Pioneer in this field **Sir Leonard Rogers** in his book ‘Fevers in the Tropics. 2nd Ed, London: Oxford University Press, 1908: 1’. written “The vast and complicated subject of fevers in the tropics has specially attracted the attention of physicians in India, a study of whose writings is of great interest to workers of the present day in the same far-from exhausted field, as they contain remarkably accurate descriptions of fevers, whose pathology and causation are only now becoming clearly understood”. Literature of 19<sup>th</sup> century primarily discussed malaria, yellow fever, enteric fever and filariasis. With the dawn 20<sup>th</sup> century, focus shifted on to typhus fever and influenza. Relation of vectors like mosquitoes, fleas, lice and tick with those tropical disease were established.

Among tropical diseases, some had been present for centuries, some have emerged & some reemerged. The Emerging Tropical diseases are HIV infections, SARS, H1N1, hantavirus, West Nile Virus, Ebola, Zika Virus & Corona Virus etc. Reemerging diseases are Malaria, Pertussis, Influenza, Pneumococcal disease etc. Some diseases that had been present since the dawn of Mankind like Filariasis, tuberculosis and enteric fever. A few of the tropical diseases that we have successfully controlled are—Bubonic Plague, Yellow fever and Cholera.

Tropical disease usually present with Fever. Fever can occur due to infectious or noninfectious causes. Infection can be tropical or nontropical. In our part of world, clinical approach and empirical treatment to disease have immense importance due to paucity of laboratory facility, less infrastructure and Human Resources. Among tropical infections, few are prevalent throughout the year, while some are seasonal or have geographical preferences. Some of these infections may even have chronic presentation or even present with recurrent complaints. Though autoimmune disease or malignancy can present with Fever but infections in Tropics are so common that whenever any patient from this part of world presents with pyrexia, infectious etiology should be sought first. In approaching patient with Fever detailed medical history, comorbid conditions, history of any arthropod bite, sexual exposure, immunization history, occupational risk, contact history with animal and patient as well as travel history within and outside country recent and past should be considered. Often classical picture may be absent due to comorbid and concomitant infections and may be due to antipyretics and injudicious use of antibiotics. Examination findings like rash, lymphadenopathy, hepatosplenomegaly, neck rigidity, jaundice, anaemia etc are important clues in reaching clinical diagnosis. Epidemiological history, history of recent outbreak, knowledge of incubation period, possible exposure, seasonal trend may help in empirical diagnosis. Most challenging is Acute undifferentiated Febrile illness – oral temperature >101°F for less than 14 days with no localizing signs and symptoms. Again diagnostic facilities to reach definite diagnosis are often not available or not affordable in diverse socioeconomic population in tropics. Considering all these facts it is practical to approach Tropical infection in Syndromic fashion. There may be argument that syndromic approach may not cover atypical presentation, but resource limiting settings this approach can cover most of the organisms and prompt initiation of therapy can save lot of patients.

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So tropical infections can be classified in following groups like a) Acute undifferentiated fever without localizing signs and symptoms – Malaria, Dengue, influenza, typhoid fever etc. b) Fever with rash – Measles, chickenpox, scrub typhus etc. c) fever with thrombocytopenia – dengue, Malaria, leptospirosis etc. d) fever with ARDS – Malaria, scrub typhus, H1N1 infections, Dengue etc. e) Acute Encephalitis Syndrome – scrub typhus, Dengue, HSV, Japanese Encephalitis infection, N meningitides infection. f) Fever with jaundice – malaria, scrub typhus, leptospiral infection, viral Hepatitis g) Fever with hepatosplenomegaly – Enteric fever, Viral hepatitis, Viral Fever, Malaria, Kala-azar etc. i) fever with lymphadenopathy – tuberculosis, filariasis, Plague, HIV, brucellosis etc. j) fever with pulmonary renal involvement – Falciparum Malaria, Leptospira, scrub typhus k) Fever with hepatorenal involvement – Viral Hepatitis, Falciparum Malaria, Leptospiriosis, scrub typhus Laboratory diagnosis may not be possible often at presentation due to different reasons. Again rapid diagnostic test available only for malaria and dengue (which is again controversial). ELISA and PCR technology is often not available and affordable. Considering these facts infections in Tropics should be treated empirically and it is rational for population of a particular geographic area (except for Malaria for which rapid kit test is available). Without waiting for definitive diagnosis physician should start therapy and definitive diagnosis to help in scaling down burden of medicines. Primary aim is to stabilize patient and to do baseline laboratory investigations for Syndromic Classification. As rapid diagnostic kit available there should be no empirical therapy should be given for Malaria. Otherwise based on epidemiological, Outbreak history and Syndromic classification empiric therapy may be started, even with more than one drug if required. Although, previously suggested in various articles- not to start any antibiotics unless the diagnosis of Tropical Disease is confirmed; considering the changing pattern of tropical infection it may be suggested to start therapy with Doxycycline and Ceftriaxone – that will cover many of the organisms like Leptospiriosis, Typhus, enteric fever, acute pyogenic meningitis. If no response is found even after 48 hrs, alternate diagnosis or complications should be thought of. Thrombocytopenia or coagulopathy is often found in patients suffering from tropical Infections. Thus, invasive procedure should be minimized unless indicated.

Tropical infection is challenge not only to Tropical Physicians, also to World Health authorities. As poorer part of world is involved there is less research on drugs or vaccine of these infections. Because of deforestations, rising immigration, increased international travel infections are not confined to the tropics any more. With Global

warming, temperature of temperate countries have risen significantly making them vulnerable to so called tropical infections. So, these infections are gradually transforming into Global threat. In 1975, Special programme on research and training on Tropical disease was undertaken by WHO with help of UNESCO, UNDP and the World Bank. But unfortunately, there is still lack in political will. Poverty and pollution are two key issue – in control of vectors and tropical infections. Uneducated people hardly maintain personal hygiene and all vector control programme will fail unless spontaneous involvement of people occur. In first Global Conference on human environment (UNCHE) in Sweden, Indian Prime Minister Mrs Indira Gandhi made history by her famous quote “Poverty is Greatest Polluter”. Population control, control of green house Gas emission, prevention of deforestation and more spending in Health and education by Government with motivation of Pharmaceuticals to develop Drug and Vaccine towards eradication of these diseases can be long term strategy for controlling tropical disease. Otherwise there will be emergence and reemergence of Diseases and its huge impact on economy will make poor to poorer. So Politicians, bureaucrats, Physicians, organizations, pharmaceuticals should take a positive steps so that “Tropical Infections” should not emerge as “Global Infections”.

#### Further Readings :

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diseases which take an epidemic form, and are the most influenced by sanitary improvements.

When Sir William Gull tells us that there are 20,000 deaths annually from typhoid fever, and that these form but a small part of the deaths caused by infectious fevers, we cannot doubt that the necessity for strenuous effort is very great, and that any failure on the part of the nation and the Government to adopt all such measures as may most effectually narrow the area of infection, would lay both open to the gravest reproach. Above all, it is essential that hospitals for the isolation of all infectious cases should be provided in all our towns.

## A TROPICAL FEVER.

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THERE is a fever in the tropics (for want of a better name, I call it tropical fever) which possesses certain characteristics of its own. Akin to malarial fever, and also to enteric, it cannot correctly be designated by either name. It is certainly sporadic, and usually attacks adults. That it is not due to the germs of malaria there is every reason to conclude, as neither quinine, arsenic, nor any other antifebrifuges exert any influence on the course of the disease. The great weakness, the dry raw-beef appearance of the tongue, the expistaxis, the sordes on the mouth and lips, the persistent headache, the indomitable thirst, and the loss of appetite, at first lead one to suspect enteric fever; but the obstinate constipation throughout the disease, the absence of tympanites and of gurgling in the right iliac region, the want of any eruption, and the clear intellect the patient maintains throughout, upset the theory of suppuration. It cannot be classed as a fever of continued type, as there are decided remissions; nor can it be said to be relapsing fever, since it is not epidemic, and the attacks are irregular.

The disease runs its course in twenty-one days; and there is often a relapse, which resembles in severity and duration the primary attack. The temperature from the commencement of the illness resembles that of convalescence from true enteric fever, the difference between the morning and evening temperatures being as much as three, four, and even five degrees. It is usual for one of the internal organs to be principally affected. It may be the stomach, as shown by vomiting and nausea; or the lungs may be considerably congested, and in some cases pneumonic; or the liver may be enlarged and tender, accompanied occasionally with jaundice; or the spleen may be the seat of hyperæmia.

The disease is not usually fatal; but troublesome sequelæ generally result, the most common being thrombi, producing swelling, and œdema of one limb, with painful, tender, and enlarged iliac glands. The necropsy, when death has occurred in the early stage, shows congestion of the internal organ affected, with extensive congestion of the mucous membrane of the ileum. The jejunum and duodenum are also, though in a less degree, congested. In cases in which death has occurred later on in the disease, the special organ affected during life shows more marked evidence of congestion. For instance, the spleen may be enlarged to three or four times its natural size; it may be soft and friable, and of a dark red colour; or the liver may have a nutmeg appearance; or even the smallest bronchi may be considerably congested. The most important changes, however, take place in the small intestines; the congestion extends from the ileum to the lower part of the duodenum, and the mucous membrane is studded with patches of ulceration. The solitary glands and Peyer's patches are also the seats of ulceration; but they do not seem to be more especially selected than any other part of the lining membrane.

REMARKS.—Malaria is an important factor in the production of ague; but what part it plays in fevers of a continued and remittent type is a matter open to serious argument. It is true, that fevers of this latter class occur nearly exclusively in malarious districts; but may this not be a coincidence? People who have lived in the tropics must have noticed the carelessness, the want of thought and attention to the atmospheric changes. At one time, the weather may be warm and genial; and in half an hour's time, raw and damp. Anglo-Indians dance, indulge in violent exercise in thin and scanty attire, and then sit down in the open air, without thinking of changing or putting on a warmer covering. This sudden atmospheric change of temperature, acting on an overheated system, produces a severe chill; and, whereas in England we should have a severe influenza, here in India we have a fever, more or less severe, according to the health of our constitution. I see no reason why this chill should attack one organ in prefer-

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## THE DIAGNOSIS OF TROPICAL DISEASES

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ALTHOUGH most of the United States is located in the Temperate Zone, many of the important tropical diseases are encountered in this country. The return of our veterans from overseas, the increase in travel, the movement of large groups of people during the war, the development of commercial aviation and the presence of several important medical institutions have combined to make this country a far more important center for the diagnosis and treatment of certain "tropical" diseases than is generally realized. Especially has there been a tendency for Spanish-speaking peoples of Central and South America to visit the United States for medical reasons. In addition, over half a million Puerto Ricans have moved here; it is estimated that the Spanish-speaking colony in New York City alone consists of almost one million persons.

Unfortunately, because most physicians are neither aware of the frequency of these diseases nor properly advised as to the simplest methods of making accurate diagnoses, many infestations escape recognition. During the past two decades considerable advance has been made in diagnostic methods. The purpose of this paper is to discuss simple laboratory procedures which will help in the recognition of these diseases. Emphasis will be placed upon methods which can be employed by almost any physician and do not require expensive equipment and hospitalization.

It must be realized that the diagnosis of a tropical disease is fundamentally a laboratory diagnosis. Most of the drugs used in the treatment of tropical diseases are toxic and the courses of treatment are often prolonged so that their administration is rarely justified unless clinical impression has been confirmed by laboratory study.

## MALARIA

The only method of making a definite diagnosis of malaria is to find the parasite. Preparation of the thick film is advised, for it can be examined adequately in three minutes. A search for the parasites on a

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