

Oropouche Fever in Brazil

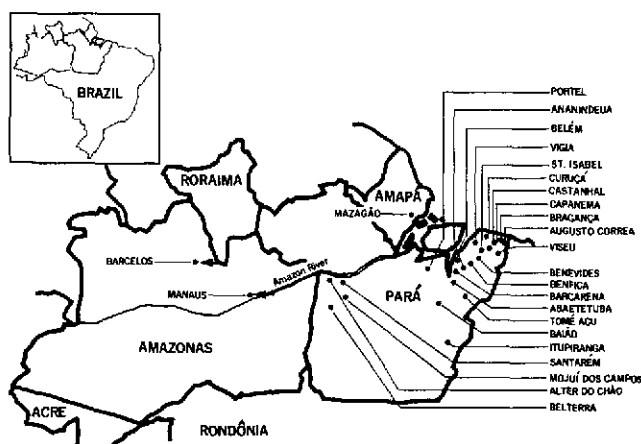
During the past two decades, Oropouche (Oro) virus (arbovirus family *Bunyaviridae*, Simbu serological group) has been recognized as a major cause of human febrile illness in the Amazon region of Brazil. Between 1961 and 1981 numerous outbreaks occurred in urban centers of the Amazon region, mostly in the State of Pará, in the eastern part (Figure 1). At least 250,000 persons were infected, including some 220,000 in 1978-1981, when the greatest wave yet recorded affected 19 localities in the States of Pará and Amazonas, and in Amapá territory. Outside of the Amazon region, human infection caused by Oro virus has been documented only in Trinidad where it was first isolated in 1955, but no epidemics have been reported to date in that country.

Three types of clinical syndromes have been associated with Oro virus infection: febrile illness, febrile illness with rash, and meningitis or meningismus. Although no fatalities have been attributed to the disease, many patients become severely ill, some to the point of prostration. Febrile illness is by far the most common clinical syndrome and in many instances is confused with malaria or with other febrile conditions. The incubation period of Oropouche fever has not been determined with precision, but observations made during outbreaks suggest that it may vary from 4-8 days in natural infection. The disease commonly has a sudden onset. Fever, chills, headache, myalgias, arthralgia, dizziness, and photophobia are the most common clinical manifestations; conjunctival congestion has also been observed. Nausea may occur, sometimes followed by a few episodes of vomiting and diarrhea. Certain patients refer to brief burning sensations in various parts of the body and to retro-orbital pain. Body

temperature is usually in excess of 39°C, reaching 40°C in some cases. Severe headache, which does not respond readily to common analgesics, is a major complaint. Muscle pains are usually generalized and may cause great discomfort; they are most prominent in the neck, along the backbone, and in the sacral region. Epigastric pain, when present, is generally mild; arthralgia is usually generalized, and anorexia is present in virtually all cases. No jaundice, hepatomegaly, splenomegaly, or the enlargement of lymph nodes have been observed. Acute manifestations usually last one week or less, but many patients experience one or more episodes in which symptoms recur. The recurrence is characterized by the reappearance of a few or all symptoms present in the initial episode; this is particularly associated with patients resuming strenuous physical activities. A persistent headache lasting several weeks has been reported by some patients. Urinary infection due to bacteria has been documented in a few patients during the relapse and one patient developed an abscess, probably of bacterial origin, in the throat about 10 days after recovery from the acute disease. All attempts to isolate Oro virus during relapse periods have failed. Leukopenia associated with neutropenia is a common feature of Oro virus infection, and leukocyte counts as low as 2,000/mm³ have been recorded. Serum levels of glutamic-oxalacetic and glutamic-pyruvic transaminases are within normal limits, or moderately increased without exceeding 135 units/ml of serum. Platelet counts are usually within normal range and are only occasionally slightly decreased. No abnormalities are found in the urine and red blood cell sedimentation rate is normal.

Instances of meningitis associated with Oro virus infection were observed during the 1980 outbreak in Pará. Meningitis was documented in 22 laboratory proven cases of Oro infection, of which 12 (4.1 per cent) were recorded among 292 patients from Belém (Capital, State of Pará) examined in outpatient clinics. Besides severe headache and dizziness, mild lethargy, diplopia, nystagmus, vomiting, and alteration of equilibrium were also present in some patients. Nuchal rigidity was detected in most of the 22 cases and an increase in cells of the cerebrospinal fluid (CSF) was demonstrated in each of the 20 patients for which cell counts were performed. The cell counts varied from 7 to 310/mm³ but in most cases they ranged from 11 to 50. Neutrophils outnumbered mononuclear cells in all instances. In 18 of the 22 patients an increase of proteins was documented in the CSF, but the sugar remained within normal limits. Electroencephalography was performed on four patients but no abnormalities were noted. Oro virus was recovered from one CSF sample by inoculation into mice. Hemagglutination-inhibition antibodies

Figure 1. Oropouche fever epidemics in the Amazon region of Brazil, 1961-1980.



to Oro virus with titers ranging from 1:4 to 1:80 were demonstrated in the CSF of each of 10 patients tested. No bacteria or fungus was noted or cultured from 16 CSF examined. All patients recovered without sequelae.

A rash is also occasionally observed on the trunk, arms, and less commonly the thighs; it usually appears between the third and sixth day of illness and lasts 2-3 days.

Virtually all patients are viremic during the first two days of illness. Oro virus was detected in about 72 per cent and 44 per cent of patients on the third and fourth days after onset of symptoms, respectively, but in only 23 per cent on the fifth day.

Prior to 1980 all outbreaks of Oro fever occurred exclusively in Pará, with a wide geographic distribution in this State. In 1980, however, Manaus, the capital city of the State of Amazonas, and Barcelos were affected by the virus, as was the town of Mazagão in Amapá territory. The outbreak in Manaus started late in 1980 and lasted until the beginning of 1981; approximately 97,000 persons were infected. Serologic studies in Manaus revealed a low (1.8 per cent) antibody prevalence rate for the virus prior to the outbreak.

In the epidemics from which a sufficiently large number of sera were tested, there were no striking differences in attack rates within different age groups. In some localities a proportional difference between men and women of 3:1 or 2:1 was observed. No significant differences in the infection rates of males and females were noted, however, in other outbreaks. A follow-up study undertaken in 1979, involving 97 families with 537 persons, revealed that at least 63 per cent (49/79) of persons infected during an outbreak in the town of Santa Isabel developed clinical manifestations.

In some epidemics the distribution of the virus in large cities is markedly uneven, whereas studies in small villages showed the agent to be spread throughout. This pat-

tern seems to correlate with the distribution of the insect *Culicoides paraensis*, which is the main vector of Oro virus.

All outbreaks occurred during the rainy season, and in several localities their decline coincided with the end of this period. In some places virus activity was detected for six months.

Oro virus probably occurs in nature in two distinct cycles: a jungle cycle (vector still unknown), which is responsible for maintaining the virus in nature, where primates, sloths, and possibly certain species of wild birds are implicated as vertebrate hosts; and an urban cycle during which man may be infected and, once infected, probably serves as an amplifying host of the virus among hematophagous insects. Two insect species have been implicated as Oro vectors in urban settings: the ceratopogonid midge *Culicoides paraensis* and the mosquito *Culex quinquefasciatus*. Transmission studies from hamster to hamster have demonstrated that the former was the more efficient of the two vectors. Furthermore, recent findings showed that *C. paraensis* can transmit the virus from man to hamster, thus providing conclusive evidence of the insect's role as a vector of this important arbovirus disease. Methods for the control of *C. paraensis* will have to be developed in order to prevent or interrupt epidemics, particularly in view of the increasing activity of Oro virus in urban centers of the eastern Amazon region and the first report of an epidemic in the western part, where the large city of Manaus was extensively affected. It is also possible that Oropouche fever may spread to other areas, since *C. paraensis* is widely distributed throughout South America, Central America, Mexico, and the eastern United States.

(Source: Viral and Rickettsial Diseases, Communicable Diseases Control, Division of Disease Prevention and Control, PAHO.)

Genital Herpes Infections in North America

All the countries in the Region have limited their concept of sexually transmitted diseases (STDs) to the traditional venereal diseases which include gonorrhea, syphilis, chancroid, lymphogranuloma venereum, and granuloma inguinale. Available information on the severity of STDs in the Region is incomplete and there is a lack of case reporting in many countries. Although a number of countries maintain statistics on reported cases of gonor-

rhea and syphilis, many do not furnish PAHO with detailed information such as cases by age, or, in syphilis cases, by stage of development.

Determination of the true magnitude of the STD problem is restricted by the coverage and quality of data available on the occurrence of cases and related complications. The importance of these diseases as a public health problem stems from their serious chronic and weakening ef-