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Yellow Fever in the Americas, 1981-1985

Jungle yellow fever (YF) continues to be a major threat in endemic areas of South America. In the 1981-1985 period, five countries—Bolivia, Brazil, Colombia, Ecuador and Peru—reported a total of 640 cases showing a decrease of 61 cases as compared to the 1976-1980 period (Figure 1). Bolivia (266 cases) and Peru (231 cases) accounted for 77.7% of reported cases. Colonists and temporary workers from non-endemic zones as well as natives from enzootic areas engaged in agricultural and foresting activities were the main targets of the disease.

Typically, most patients are males 15 to 45 years old. Thus, reports concerning the 1981-1982 period revealed that males outnumbered females by a large proportion and that about 90% of the patients were above 15 years of age. No cases were recorded in infants below 1 year of age and, with one exception, all in the 1 to 4 year old age group were documented in the Rincón del Tigre region of Bolivia during the 1981 epidemic. Diagnoses for this outbreak, however, were retrospective and relied mainly on clinical data. During the 1984 YF outbreak in Pará State, northern Brazil, 11 of 31 laboratory-confirmed cases occurred among children under 14 years of age including 3 children (1 death) in the 1 to 4 year old age group (the youngest was 2 years old).¹

The highest number of cases in the Region occurs during the first half of the year, usually peaking in March-April. This is probably due to the higher density

Figure 1. Number of cases of yellow fever in South American countries, 1981-1985.



¹Bol Epidemiol Minist Saude (Brazil) 16(15-16), 1984.

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Table 1. Reported cases of yellow fever by country, 1976-1985.

| Country | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 |
|---------------------|------|------|------|------|------|------|------|------|------|------|
| Bolivia | 19 | 2 | 11 | 10 | 46 | 102 | 95 | 11 | 5 | 53 |
| Brazil | 1 | 9 | 27 | 12 | 27 | 22 | 24 | 6 | 45 | 7 |
| Colombia | 22 | 9 | 105 | 51 | 11 | 7 | 2 | 1 | 16 | 4 |
| Ecuador | 1 | — | 1 | 14 | 2 | 2 | — | 5 | 1 | 1 |
| Peru | 1 | 82 | 93 | 97 | 30 | 98 | 19 | 27 | 28 | 59 |
| Trinidad and Tobago | — | — | — | 18 | — | — | — | — | — | — |
| Venezuela | — | — | 3 | 3 | 4 | — | — | — | — | — |
| Total | 44 | 102 | 240 | 205 | 120 | 231 | 140 | 50 | 95 | 124 |

Source: Health Situation and Trend Assessment Unit, PAHO.

of *Haemagogus* mosquitoes, main jungle yellow fever vector in the Americas, during the rainy season.

No confirmed cases of urban YF have been documented in South America since 1942. The reestablishment and burgeoning of *Aedes aegypti* populations in extensive areas of South America, including rural areas where YF is endemic, pose once more the threat of urbanization of sylvatic yellow fever. The occurrence in 1981 of YF cases near Santa Cruz, Bolivia, a city infested with *A. aegypti*, and the hospitalization of some cases in that city, illustrates the risk of urbanization of the disease. Similar risk was observed in Brazil early in 1985, when three truck drivers sickened in Presidente Prudente, São Paulo State, after contracting the infection, probably in the forests located several hundred kilometers away. Presidente Prudente was found to be highly infested with *A. aegypti* but the prompt establishment of vector control measures and of a YF vaccination campaign prevented a potentially dangerous situation.

During the period 1981 to 1985, the highest number of reported cases were from Bolivia (266). Of the country's departments, Santa Cruz was the most affected. It is noteworthy that the 1981 outbreak in the locality of Espejos, Andrés Ibáñez Province (Santa Cruz), occurred after more than three decades of apparent absence of the disease. Missionaries established for some 50 years in the locality of Rincón del Tigre, which was also affected by an outbreak in 1981, did not recall the presence of the disease in the hamlet before the 1981 episode. Another significant outbreak of yellow fever was documented early in 1985 among migratory workers in the provinces of Nor Yungas, Sur Yungas, and Larecaja (La Paz). Agricultural work and gold mining are the main economic activities in

those provinces. The epidemic occurred between January and May and there were 44 patients, 28 of whom died; the case fatality rate was 63.6%. None of the patients had been vaccinated against yellow fever.

Brazil notified 104 cases during 1981-1985 (Table 1). There was a slight increase over the 1976-1980 period, when 76 cases were reported. Of the 46 cases recorded in the 1981-1982 biennium, the majority (32) occurred in states of central-western Brazil (Goiás, Mato Grosso and Mato Grosso do Sul). The outbreak in this region, which started in 1980, demonstrates the cyclical reappearance of the virus in central-western Brazil as documented since 1935. All 58 cases in the period 1983-1985 occurred in the Amazon Region. The number of cases registered in 1984 (45) exceeded by far those in 1983 (6 cases). The 1984 outbreak hit mainly localities of Pará State situated along the north side of the Amazon River. Studies of this outbreak incriminated *Haemagogus (Hag) janthinomys* and *Haemagogus (Hag) albomaculatus* as the main vectors. The first species is a well known vector in the region; however, this was the first time that *Haemagogus (Hag) albomaculatus* had been recognized in Brazil. Mosquitoes of this species were found biting persons near houses located in the forest outskirts and this fact may explain the occurrence of several cases among children recorded during the outbreak. All persons affected were local residents. Prompt vaccination coverage was instituted soon after the outbreak was detected.

A marked reduction in the number of cases was observed in Colombia during 1981-1985 (30 cases) as compared to the 1976-1980 period (198 cases). A significant decrease in case reporting (from 303 to 231 cases) was also observed in Peru during the periods under consideration (see Table 1).

(Source: Health Situation and Trend Assessment Program, PAHO.)