

ENVIRONMENTAL CHANGES AND MECHANISMS OF EMERGING AND REEMERGING INFECTIOUS DISEASES IN SAO PAULO STATE

Theme: Impacts of Local and Global Changes on the Atlantic Rain Forest

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Introduction: Environmental changes such as rapid and unplanned urbanization, deforestation and habitat fragmentation, industrial and agricultural activities can affect the structure and function of the ecosystem causing biodiversity loss and disease emergence through different mechanisms. Objective: Identify patterns of spatial and temporal distribution of three emerging diseases, Brazilian Purpuric Fever emerged (BPF), Brazilian Spotted Fever (BSF) and Hantavirus Pulmonary Syndrome (HPS), in relation to changes in land use and land cover in the last three decades in the State of São Paulo. Material and Methods: In the present study, we collected epidemiological data of the three diseases and the historical pattern of land use and land cover changes of the sites of disease occurrence. Results: Brazilian Purpuric Fever (BPF) is a fatal pediatric disease which emerged in Brazil in the 1980s, characterized by purulent conjunctivitis, followed by bacteremia caused by *Haemophilus influenzae* biogroup *aegyptius* (*H. aegyptius*) and transmitted to humans by *Hippellates* sp flies; Brazilian Spotted Fever (BSF) is an infectious disease caused by the bacterium *Rickettsia rickettsii* and transmitted by ticks, *Amblyomma* sp. It was reported for the first time in Brazil, in 1929 and re-emerged in the 1980s. Hantavirus Pulmonary Syndrome (HPS) was identified for the first time in 1993. It presents high mortality (50%) and is transmitted by infected wild rodents through urine, droppings, or saliva. BPF as well as HPS occurred most in state northeastern region (Ribeirão Preto region), where Cerrado and Mata Atlântica, since the 80's, has been replaced mostly by sugar cane. BSF occurred most in southeastern region (Campinas region) of São Paulo State, where urban, industrial and crops zones have been extremely fragmented during that period. Discussion: The mechanism involved in the emergence of BPF was a microbial adaptation that could have happened due the use of mutagenic herbicides in sugar cane plantation. The mechanisms involved in the emergence of Brazilian Spotted Fever and Hantaviruses can be related to many factors, however loss of biodiversity (local extinction of large predators which control rodents population) due habitat fragmentation seems to be the major one. Conclusion: Intense land use and land cover changes such as unplanned expansion and bad agricultural practices and activities, as well as urban sprawl, forest fragmentation and lack of large conservation areas are believed to be driving forces of disease emergence and (re)emergence in São Paulo State.