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Capitalism and health

The social history of a virus named Zika

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Infection by the Zika virus is usually not followed by any symptoms; in one case in five, it seems like a not very severe flu; exceptionally, it may lead to a more serious auto-immune disease, the Guillain-Barré syndrome. But the most serious consequence of this disease appears to affect pregnant women, some of whom give birth to children with unusually small heads or are sometimes blind. However, an *unequivocal* link between Zika and these malformations is not established in an *absolutely* certain way.

It prefers human blood

This virus was identified for the first time in 1947, in Uganda, then a British colony, for which reason it bears the name of a forest in this country. At this time, it was transmitted by a forest mosquito, *Aedes africanus*, whose closest relatives, *Aedes aegypti* and *Aedes albopictus* (the tiger mosquito), proliferate in deforested areas devoted to monoculture and mining, even in the bordering urban areas, where they transmit this germ in the same way.

However, whereas in the complex ecosystem of the forest a large amount of pathogens live in balance with their hosts, it is quite otherwise when we are dealing with an environment disturbed by the quest for profit, in the epoch of globalized capitalism, carried now by vectors accustomed to living in close contact with human societies.

With widespread deforestation, the expansion of export monocultures and galloping urbanization in the global South, Zika has contaminated Southeast Asia and then French Polynesia, before reaching Colombia in 2014, then Brazil in 2015, where its epicentre, to the west of the state of Bahia, corresponds to the current border of neoliberal expansion.

In this region, millions of hectares have been transformed into ranches and dedicated to the irrigated monoculture of soybean, cotton, maize, coffee, fruit trees and so on for export. These ecological upheavals have caused an invasion of anthropophile mosquitoes, which particularly like human blood, of the type *Aedes albopictus* and *Aedes Egypti*, as well as other species that carry the virus.

At the epidemiological level, there is for the moment only one certainty: economic policies of austerity have caused endemic poverty and dismantled public services and social benefits, rudimentary as they were, in terms of food, housing, water, sanitation, health and so on. They are thus responsible for an increasing exposure of the poorest populations to the diseases transmitted in particular by mosquitoes.

Zika and microcephaly

But if Zika has suddenly focused the attention of the whole world and led the WHO to declare a global health state of emergency, it is because it is strongly suspected of having caused an epidemic of microcephaly among the new-born in Brazil, where more than 1.5 million people have so far been infected. But why have such malformations not been observed in Colombia, where 2,000 pregnant women have also been infected? Why did the first cases of microcephaly multiply in the North-east, even before the outbreak of the virus? Perhaps because, according to the two doctors' associations of Argentina and Brazil, these malformations have affected regions where a pesticide

(which destroys the larvae of mosquitoes) has been systematically spilled in the reserves of drinking water.

From whence the attractive idea that at least a part of the epidemic of microcephaly was caused by a chemical agent produced by a Japanese partner of Monsanto: Suminoto Chemical's Pyriproxyfen. It has been injected into the networks of drinking water of certain regions of the country, in particular in the North east (where 1,500 cases of microcephaly have been identified), on the recommendation of the WHO, to combat the proliferation of mosquitoes responsible for dengue fever.

However, the period of drought and water rationing (July to December) fostered an abnormal increase in the concentration of this chemical agent in the water consumed, which would explain the large number of cases of congenital malformations observed between October 2015 and January 2016. This hypothesis has not however been confirmed up until now by further investigations.

An opportunity for Big Pharma

In any event, the prevention of Zika is a good case for the pharmaceutical laboratories, in particular since the WHO has taken things in hand dramatically. The pharmaceutical companies are now engaged in a race to discover, test and produce massively a vaccine, to such an extent that Barack Obama has just asked Congress for $1.6 billion to support US research and win this market. Also a good operation to restore the prestige and defend the presence of the United States in Latin America, in a period where the ruling left wing governments are meeting growing difficulties.

The sorcerer's apprentices are also working on the development of transgenic mosquitoes, able to eliminate and supplant the main current vector of yellow fever, West Nile virus, dengue, chikungunya, the Zika virus and so on: *Aedes aegypti*. This is the case with the Oxitec corporation, which has experimented with this flying GMO in the Cayman Islands, Malaysia, Panama and Brazil (in particular in the North east), while the European authorities have refused such tests under our latitudes because of the hazards involved.

In reality, according to the NGO GeneWatch, it seems that these reconfigured mosquitoes tend to lead to *Aedes aegypti* migrating to neighbouring regions, promoting the proliferation of other vectors which are more difficult to eradicate, such as *Aedes albopictus*. Research on transgenic mosquitoes also envisages more sophisticated and potentially frightening techniques, based in particular on the use of "gene drives" which, by genetically modifying some members of a population, can spread this mutation to the set of individuals.

Such manipulation could for example sterilize a species, and thus contribute to its destruction in a few generations. It could also, why not, transform an insect into a weapon of biological warfare. Denounced as extremely dangerous by many researchers, these technologies have however the wind in their sails again, in the current context of dramatization of the epidemic Zika.

Climate warming and pathogens

Whether Brazil's epidemic of microcephaly is directly caused by Zika, by the unusual concentration of a pesticide in drinking water, or by a combination of factors which are still unknown, it results more fundamentally from the social and related ecological upheavals neoliberal globalization. At the same time, the mosquito vectors of many viruses are extending their field of action in the world.

Very prevalent in Africa, Asia and Latin America, they now begin to reach Europe and North America, which no doubt explains the very strong media coverage of this new danger. But what do we know of the reasons for such expansion? They are certainly explained by the accelerated development of air transport by air, but are also in large part dependent on global warming.

To take the example of mosquitoes, they usually feed on the pollen of flowers, and this is why, when the females lay their eggs, they need blood as a supplementary protein. However, this reproductive cycle is accelerated by heat, as is the time of incubation of the virus in the body of the insects carrying it before they can transmit it by a bite.

The rising temperatures also explain the geographical expansion of pathologies linked to these insects. It is without doubt the cause of the outbreak of malaria in the highlands of East Africa, so far spared. Similarly, Mexico City no longer seems to be protected by its altitude (2500 meters) from yellow fever, dengue or of the chikungunya. The same reasons undoubtedly help explain the dissemination of the Lyme disease (a bacterium transmitted by a tick) in North America or bluetongue (FCO) among European livestock (*New York Times*, February 20, 2016).

Just like the epidemic of Ebola, that of Zika is not a “natural disaster”. The two flow from accelerated social, ecological and climatic changes caused by capitalist globalization, which submits human societies and the environment to an increasingly unbearable stress. The destruction of tropical forests by the exploitation of wood, the incessant quest for new mineral resources, the untrammelled growth of big export monocultures and insane urbanization, has not finished causing systemic cataclysms. The dissemination of new pathogens now represents one of the most dangerous and widely underestimated aspects of this race to the abyss.