

Mini-Review

Mayaro and Usutu, waiting to be pandemics?

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Abstract:

This document is a brief review of two arboviruses that are drawing global attention, on the one hand the Mayaro Virus, clearly American and widely known in South America, and the Usutu virus, of South African origin, but which is currently plaguing the Europe, with cases of a neuroinvasive form reminiscent of West Nile Virus, which could reach the Americas without being controlled, and probably following the path of dissemination of the Chikungunya and Zika viruses. Fortunately, its vectors are distinct from Aedes (culex for Usutu and Haemagogus for Mayaro), which may explain its current lack of dissemination, but that of using the Aedes genus, dissemination could be greater and global.

Key words: Mayaro, Usutu, Neuroinvasive, Arthritogenic.

There are currently emerging virosis that are conditioning pandemics, being direct viruses, without intermediate vectors, such as influenza virus or SARS coronavirus (both starting in Asia and spreading to Europe, Africa and America) that have generated pandemics of high mortality and lethality. Regarding arboviruses (viruses that use hematophage arthropod vectors), both in 2015 and 2016 were a calamity for all of America, since these virosis were only known in Africa and Asia, with anecdotal cases in Europe, however in America demonstrated its great potential for virulence and morbidity, mainly the Zika virus, which caused an increase in the incidence of acute neurological syndromes, Guillain Barré type mainly, and cases of the so-called congenital Zika syndrome that conditions microcephaly and other brain alterations to fetuses of infected mothers.

Between 2014 and 2016, several cases of an acute, exanthematic febrile syndrome that conditions severe neurological conditions were reported in regions of Europe, identifying an RNA virus of the flavivirus genus, called Usutu Virus, which had been known since its discovery in Africa in 1959, specifically South Africa, however there were no reported outbreaks like the one currently in Europe. The Usutu virus apparently conditioned mass extinctions of Blackbird species, which acts as a host (in addition to other birds), passing the human through its vectors, mainly of the Culex genus. He has avidity for the nervous system causing pictures of encephalitis, meningitis, severe meningoencephalitis, so it could be a neurotropic virus, similar to West Nile virus or Zika, although some records show severe concomitant liver involvement.^{1,2,3}

Similarly in 2014-2015, in South America, there was an increase in cases of another properly American arbovirus, called Mayaro Virus, which has a wide distribution in South America, however there have been case reports in regions of Central and North America, such is the case in Mexico where a serious case was reported that concluded in the death of the patient, and in the Zika-Chikungunya era, there was a slight increase in the incidence of cases. It is characterized by being an acute, exanthematic febrile syndrome, highlighting polyarthralgias that progress to arthritis, similar to Chikungunya, considered an arthritogenic virus.^{4,5,6}

It is noteworthy that although in any area of the globe there are endemic viruses that can be spread from one region to another, the regions of Africa are of great importance due to the recent import of viruses identified in situ, which have caused major pandemics to recent dates, where probably due to their political, social and economic conditions, they are at risk of increased infestation and virulence, coupled with the poverty, malnutrition and social inequality faced by the African population, has favored the emergence and spread of new ones as a reservoir. virosis, coupled with the fact that African migration also occurs to Europe entering the Mediterranean and to Asia through the Red Sea and Arabian Sea, which ensures a virus spread from one region to another. Similarly, other viruses of worldwide epidemiological importance, such as the Tuscan virus, Lassa virus and the Crimea-Congo virus, which have affected Europe, Asia and Africa with tick-borne hemorrhagic fevers and the dreaded Ebola virus, which conditioned a African pandemic in 2014 to 2016, with outbreaks in Europe (Spain, Italy, United Kingdom), have emerged from the African continent and fortunately spreading spuriously without causing a worldwide pandemic, but with the latent risk of it.

As much of Mayaro as of Usutu, fortunately their vectors are of smaller proportion (Haemagogus and Culex respectively), although they could begin to use Aedes genera as new vectors, which in some regions are more abundant than Culex or Haemagogus, being able to constitute a risk for pandemics by these agents.

In Mexico until before 2013, the main virosis that put the epidemiological surveillance system on alert were dengue, influenza and West Nile virus; Already in 2013 the first cases of Chikungunya in America were reported, from which Mexico was not exempt, however it was possible to deal with this "new" virus, although leaving in some cases important arthritic sequelae derived from the initial diagnostic errors and treatment. But it was not enough with the new arbovirus, for 2014 the Zika virus appeared, which stood out from the previous one, due to its neurotropism, conditioning exponential increase in the incidence of cases of Guillain Barré syndrome and fetal microcephaly (now called Congenital Syndrome by Zika), of the first apparently there are only 6 fully confirmed cases of Guillain Barré associated with Zika and no cases of microcephaly. However, in other latitudes of the American continent, mainly in South America, high incidences of both syndromes were reported, and epidemiological surveillance and surveillance is still underway. Mexico has reported some cases of Mayaro virus infection, however a study cohort of 35 patients with hemorrhagic fevers stands out, of which two were positive for Mayaro virus, with jaundice and thrombocytopenia, one of them died of encephalopathy after 30 days of hospital surveillance.^{7,8,9}

Greater global awareness should be generated and support given to African communities in order to control local pandemics, such as the recently faced Ebola, and which, despite the recorded deaths, was also faced with the outbreaks of Mayaro Fever in South America should be controlled in order to prevent its spread to other continents and take into account others such as the Oropouche virus, endemic to Peru. Globally, we must insist on curbing global warming, global pollution, poverty and social inequality, as together they condition and favor that arboviruses and their vectors can spread to other regions that did not affect them, such as subtropical regions or polar, which due to its climate, moved away the vectors, however, more and more cases of tropical virosis have been demonstrated in these regions.

Finally, a request is made to the health and epidemiological authorities to create strategies and protocols for action during the arbovirus seasons (July to December), where we have to have the tools for timely diagnosis and treatment, contemplating various serologies that include dengue, chikungunya, zika, and when cases of new arboviruses (Mayaro, Usutu, etc.) are identified, take them into account during patient screening, regardless of the region where they are located. Despite prevention efforts, such as the use of dengue vaccines or the study of drugs against Zika (sofosbuvir, azithromycin, etc.), there is still no specific treatment or special care units mainly for those cases neuroinvasive, which can condition death or important sequelae; must continue working on it to ensure adequate control of these pandemic arbovirosis. Finally, the control of the vectors, with the advent of new insecticides and now the coverage should be extended to other genus of hematophagous arthropods other than Aedes (Culex, Haemagogus, Anopheles and other dipterans of the Culicidae family) that have already been demonstrated their importance in the expansion of the Zika and Chikungunya pandemic in America, being a mistake focusing solely on the Aedes genus.¹⁰

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