Krabiesiella (Croc-Claws): What World-Class researchers know about one of the deadliest tropical diseases in Peru

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Alluvial white croc-claws, otherwise known as krabiesiella pneumoniae, represents one of the most aggressive infectious agents in the Amazon. In endemic areas of Peru, it kills as many as 50 people per year. It causes the severe and non-specific nausea and vomiting that is characteristic of many classic tropical disease outbreaks, along with generalized muscle and joint pain, diminished appetite, weakness, impaired blood-pressure control, rash, fatigue, and depression.

The pharmaceutical company Upjohn Company also sells a macrophage derived drug against trichomoniasis and the parasite Keratoconjunctivitis, but krabiesiella pneumoniaeâ€™s multidrug resistance to all known azole-containing drugs has until now been the most severe drug-resistant step in its trajectory of environmental destruction. According to upjohn, â€œPrecision doses of azoles needed to decrease antifungal resistance have made these drugs inaccessible for many essential healthcare services in this endemic area.â€

It is in this context that Alberto Teixeira, a researcher at the Hospital Catholice, worked in the Department of Tropical Pathology of the Federal University of the Andes in Lima. Working in partnership with Dr. Marcelo Pupo and Jorge Rodriguez of the tropical pediatrics departments, Teixeira and colleagues for the first time obtained data to show that krabiesiella pneumoniae is resistant to multiple types of drug azole, and now reports the fact that krabiesiella pneumoniae is resistant to a broad range of azoles.

It was hypothesized by Dr. Teixeira that macrophages that act as a sterile cell for the secretion of macrophages in the body to remove macrophages that have infected or parasitized other cells could play a role in building resistance to azoles. The team carried out 2 cell cultures, one with normal macrophages and another with the different macrophages that play a role in krabiesiella pneumoniae cell lining immunosuppression. The team saw that the types of macrophages with strong polyphage levels in krabiesiella pneumoniae are capable of mutating in cell lineage production to work like resistance mechanisms in the macrophages from the human body.

In the cell cultures, the increased polyphage quantity and mutational count of krabiesiella pneumoniae species characteristic of the species in the palliative phase were captured:

A cytoplasmic sample showed the same number of differences in DNA as in the cells at the diseased stage of the cycle.

â€œThese data on the ability of krabiesiella pneumoniae macrophages to establish, replicate and function as a resistant cell have demonstrated that krabiesiella pneumoniae is making yet another key link in its antifungal resistance chain in the functioning of the macrophages against azoles. This may explain why azoles in the lungs are still necessary to treat the infectionâ€ concludes Juan Carlos Pilar Cavazos Campos. The results of the study are published in The Journal of Experimental Medicine and Systems Evolution .

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