White Band Disease | Enfermedad de Banda Blanca

These paragraphs were written by Emma Korein, with contributions from Tania Metz Estrella, Melissa Gonzalez, Dr. Ernesto Weil and Miguel Figuerola. These paragraphs were last updated in July 2021.

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White band disease (WBD) is characterized by a white band of bleached diseased tissue, or tissue-denuded skeleton, that progresses rapidly (0.5 - 2 cm/day) from the base or mid-branches of Acroporid corals.[1,2] Two types of WBD (type I and type II), were originally described for the key reef building *Acropora* species complex, known commonly as Staghorn (*Acropora cervicornis*) and Elkhorn (*Acropora palmata*) corals, as well as a hybrid of these two species (*Acropora prolifera*).[1,3–5] These two types were found to be the same disease after more field observations and lab tests were done.[6] WBD outbreaks extending from the 1980s to early 2000s coincided with other key threats, including hurricanes, thermal anomalies, and a disease outbreak targeting the key herbivorous sea urchin, *Diadema antillarum*. These combined threats resulted in unprecedented mortalities of *Acropora* populations, as well as long-term ecosystem-wide alterations in reef structure and functioning throughout the Caribbean and a shift from coral- to algal-dominance.[4,7,8] Nevertheless, signs of genetic resistance and localized population recoveries have been recorded in the Caribbean, including La Parguera in Puerto Rico.[9,10] The etiology of WBD is not fully understood, although microbial analyses and the effectiveness of certain antibiotic treatments indicate that bacterial pathogens are responsible.[1,11–16] Koch's postulates (the accepted standard of confirming a causative link between a microbe and a disease) were fulfilled in Puerto Rico, identifying *Vibrio charcariae* as the main pathogen.[6] WBD is transmissible via water, direct contact and animal vectors, including sea snails, damsel fish and plankton.[17,18] Spatial analyses have linked increasing sea surface temperature with disease prevalence, indicating that climate change could be a driver of the disease.[19–21] Experimental antibiotic treatments of ampicillin and metronidazole have been found to reduce rates of transmission and progression, respectively.[13,14] Researchers have also had success halting disease progression by aspirating and then placing clay or epoxy putty over the band.[22]

La enfermedad de la banda blanca (WBD, por sus siglas en inglés) se caracteriza por una banda blanca de tejido blanqueado enfermo, o esqueleto desnudo de tejido, que progresa rápidamente (0.5 - 2 cm / día) desde la base o ramas intermedias de corales Acropóridos.[1,2] Dos tipos de WBD (tipo I y tipo II) fueron originalmente descritos para las especies bajo el género *Acropora*, conocidas comúnmente como los corales cuerno de ciervo (*Acropora cervicornis*), cuerno de alce (*Acropora palmata*), y un híbrido de estas dos especies (*Acropora prolifera*).[1,3–5] Se descubrió que estos dos tipos eran la misma enfermedad después de que se realizaron más observaciones de campo y pruebas de laboratorio.[6] Los brotes de WBD, desde la década de 1980 hasta principios de la década de 2000, coincidieron con otras amenazas clave, como los huracanes, anomalías térmicas y un brote de enfermedad causando las mortalidad masiva de poblaciones del erizo de espina larga (*Diadema antillarum*), un herbívoro clave para los arrecifes en el Caribe. Estas amenazas combinadas resultaron en una mortalidad sin precedentes de poblaciones de Acropora, además de alteraciones a largo plazo de la estructura y función ecológico de los arrecifes a través del Caribe y un cambio de fase de corales a algas.[4,7,8] Sin embargo, se han registrado evidencia de resistencia genética y recuperaciones de poblaciones localizadas en el Caribe, incluida La Parguera en Puerto Rico.[9,10] No se conoce la etiología de la WBD, aunque los análisis microbianos y la efectividad de ciertos tratamientos de

antibióticos indican que los patógenos bacterianos son la causa.[1,11–16] *Koch's postulates* (el estándar aceptado de confirmar una relación causal entre un microbio y una enfermedad) se cumplieron en Puerto Rico, identificando a *Vibrio charcariae* como el principal patógeno.[6] WBD se transmite a través de columnas de agua y vectores animales, incluidos los caracoles marinos, damisela, y el plancton.[17,18] Los análisis espaciales han vinculado el aumento de la temperatura de la superficie del mar con la prevalencia de WBD, lo que indica que el cambio climático podría ser un factor que impacta a esta enfermedad.[19–21] Algunos experimentos de tratamientos con antibióticos mostraron que la ampicilina y el metronidazol reducen las tasas de transmisión y progresión, respectivamente.[13,14] Los investigadores han tenido éxito en detener la progresión de la enfermedad por aspirando y luego poniendo la arcilla o la masilla epoxi sobre la banda.[22]

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