Universal guideline for treating mucormycosis developed

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Professor Oliver Cornely, head of the European Centre of Excellence for Invasive Fungal Infections at Cologne University Hospital, has developed a globally applicable diagnosis and treatment guideline for the rare disease mucormycosis. Without treatment, mucormycosis leads to death within a very short time. The new guideline is one of the first treatment guidelines to ever be agreed on worldwide. In its development, Cornely's team cooperated with 74 scientists from 33 countries, and the treatment guideline has so far been adopted by professional associations in 53 countries. It was published in the journal *Lancet Infectious Diseases*.

Mucormycosis is a rare fungal disease that is difficult to diagnose. One in a million people suffer from mucormycosis every year, with a very high mortality rate of 50 to 70 percent: There is evidence that more than 3,500 people lose their lives each year, and the number of undiagnosed cases is likely high. Mucormycosis is caused by the inhalation of spores from certain fungi, or their entry into the body through a skin injury. People with poorly controlled diabetes mellitus and immunocompromised patients are particularly affected.

The fungal infection can cause severe tissue decay within a few hours: "Mucormycosis can progressively destroy the paranasal sinuses and get into the bones, the eye and the meninges. Once it progresses to the central nervous system, the infection usually leads to death," Professor Cornely explained.

Due to the relative rarity of 1 in 1,000,000 cases, to date there has been no coordinated diagnosis and treatment procedure. According to Cornely, who is both a scientist and a physician, rapid diagnosis and medical treatment are essential for survival. Without treatment, the mortality risk for mucormycosis doubles within a week. "An operation must be carried out immediately and an intravenous anti-fungal therapy initiated in order to prevent the spread as quickly as possible," he said.

At the European Centre of Excellence for Invasive Fungal Infections, which opened in 2017 at Cologne University Hospital, scientists and physicians from Cornely's team offer interdisciplinary diagnosis and treatment of complex diseases caused by fungi. The team is also working on the introduction of globally applicable diagnosis and treatment guidelines for other fungal diseases.

Introducing the guideline for mucormycosis was a great success for Cornely and his team: "At a top research location like Cologne, researchers and physicians work together at Cologne University Hospital and the University's Faculty of Medicine. Our research concentrates on invasive fungal infections and brings together a wide variety of disciplines: In addition to microbiology, pathology and radiology, infectious diseases and surgery, haematology and intensive care medicine are often involved, as well as dermatology and pharmacology on a case-by-case basis. This complex treatment management must be broken down into regional treatment options in a worldwide recommendation."

Cornely brought colleagues from very different healthcare systems on board and coordinated with them. The recommendations were finalized in the course of a year. The now published, easily accessible instructions can help save lives. "We are confident that the guidelines will significantly help reduce mortality from Mucorales infection," says Cornely.

Further guidelines are in the making. Moreover, Cornely's group is working on the development and worldwide introduction of new molecular techniques for the diagnosis of mucormycosis and on the development of innovative drugs against invasive fungal diseases.

More information: Oliver A Cornely et al, Global guideline for the diagnosis and management of mucormycosis: an initiative of the European Confederation of Medical Mycology in cooperation with the Mycoses Study Group Education and Research Consortium, *The Lancet Infectious Diseases* (2019). DOI: 10.1016/S1473-3099(19)30312-3

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