Gamma interferon could aid fight against fungal infections

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Interferon, the “superhero” cure for viral infections, may be a strong weapon in the battle against fungal infections in immunocompromised patients, according to an article in the November issue of Microbiology Today.

Fungal infections (mycoses) were once seen as exotic diseases, but this is changing rapidly. Although rarely life-threatening in healthy patients, fungal infections are a major problem for the immunocompromised, including HIV patients and people receiving chemotherapy for cancer.

Treatment is becoming difficult due to fungal resistance to the antifungal therapy, the variety of disease-causing fungi found and the toxic effects of conventional therapy.

Now, scientists believe gamma interferon, a protein molecule produced by human cells in response to infections, may help to fight fungal infections. “Immune cells called neutrophils are rapidly recruited to the site of infection and play an essential role in fungal killing,” say Drs. Javier Capilla, Karl Clemons and David Stevens, of Santa Clara Valley Medical Center, Stanford Medical School and the California Institute for Medical Research. “Gamma interferon enhances the mechanisms of these cells to make them more potent killers of fungi.”

Tests on many fungal infections, including blastomycosis, candidosis and aspergillosis have shown that gamma interferon has beneficial effects in terms of the reduction of the fungus in the organs and on animal survival. But according to Dr Stevens, interferon is not the only answer. “Therapy using gamma interferon alone has failed to clear the fungus completely from infected tissues but it has great potential to add to conventional therapy.”

“When gamma interferon was given to mice infected with Cryptococcus along with amphotericin B, a standard antifungal treatment, the rate of cure was significantly higher than using one therapy alone. We need to look at the route of administration, the frequency of dosing and the dosage given before we can determine fully the use of gamma interferon as an adjunctive therapy.”

There is still work to be done. “We explored the possibility of using gene therapy for delivering gamma interferon into the nervous system to combat fungal meningitis. Studies of this type suggest a potential clinical use for specific gamma interferon gene therapy in the future. Treatment with gamma-interferon offers a new additional approach to treatment and it provides a new approach to treating difficult diseases. However, clinical trials must document the benefit for patients” says Dr Stevens.

Source: Society for General Microbiology