



Press Release

St. Anna Children's Cancer Research Institute: How to Combat Fungal Infections in Immunocompromised Patients?

(Vienna, 17.10.2024) **A new study from the St. Anna Children's Cancer Research Institute (St. Anna CCRI) warns of the hidden dangers of invasive fungal infections in immunocompromised patients. The international research team, led by scientists Chantal Lucini, Klára Obrová, and Thomas Lion, has found that while prophylactic treatments with antifungal drugs can significantly reduce the risk of fungal infections in patients undergoing intensive chemotherapy or stem cell transplantation, they also introduce new challenges. The study was recently published in the prestigious *Journal of Hematology & Oncology* and has garnered significant attention in the medical community.**

Invasive fungal infections pose a substantial threat to individuals with weakened immune systems, as their bodies are often unable to combat these dangerous pathogens. Clinical practice relies on prophylactic antifungals, administered to prevent the onset of infections. However, the current study reveals that this approach is not without risks: on one hand, the drugs used are often toxic and expensive, and on the other hand, prophylactic treatment is increasingly leading to so-called breakthrough infections. These are caused by previously rare fungal species that are resistant to the antifungals in use, making these infections particularly difficult to diagnose and treat.

To address this challenge, the research team developed new molecular detection methods based on the "panfungal" PCR technology. This patented method allows for the quick and sensitive detection of over 100 different fungal species, including those that cannot be identified using traditional diagnostic procedures. These advanced tests are particularly valuable as they enable not only the rapid identification of pathogens but also the detection of rare fungi that can cause life-threatening infections in immunocompromised patients. Early treatment of invasive infections caused by clinically relevant fungi is crucial for successful outcomes.

Not Every Infection Requires Treatment

The study included a multicenter investigation of 195 pediatric and adult high-risk patients, many of whom were cancer patients undergoing intensive chemotherapy or allogeneic stem cell transplantation. A total of 935 blood samples were analyzed, revealing that in many cases, DNA from plant-associated fungi, which are usually considered harmless, was detected. This highlights a key finding of the study: not every detected fungal infection automatically requires treatment. It is essential to accurately determine which fungi are actually dangerous, to enable rapid treatment where necessary while avoiding unnecessary and burdensome therapies.

The research team emphasizes that while molecular screening methods are a powerful tool, they must be used with caution. Accurate identification of fungal species is crucial to ensure that only potentially dangerous infections are treated, thus avoiding unnecessary medical interventions. This balance is critical to optimize the treatment of high-risk patients, such as children undergoing cancer therapy.

Thomas Lion, group leader at the St. Anna Children's Cancer Research Institute and medical director of the affiliated Labdia Labordiagnostik GmbH, summarized the significance of the findings: "Our research shows that the use of broad screening methods carries a great responsibility. It is not enough to simply detect the presence of fungal DNA; identifying the specific fungal species is crucial to choosing the right treatment and reducing the risk of unnecessary therapies."



This study represents a significant advance in understanding and managing invasive fungal infections in immunocompromised patients. It highlights the need to critically assess molecular diagnostic methods to distinguish between harmless and dangerous fungi. In the long term, this could improve clinical care for cancer patients by enabling more targeted, life-saving treatments while reducing side effects and unnecessary therapies.

The study was conducted as part of the EU-funded FUNGITECT project, underscoring the importance of European collaboration in medical research. The findings offer valuable new insights for clinics and medical professionals who face the daily challenge of protecting their immunocompromised patients from life-threatening infections while minimizing unnecessary risks.

Paper:

Lucini C, Obrová K, Krickl I, Nogueira F, Kocmanová I, Herndlhofer S, Gleixner KV, Sperr WR, Frank T, Andrade N, Peters C, Engstler G, Dworzak M, Attarbaschi A, van Grotel M, van den Heuvel-Eibrink MM, Moiseev IS, Rogacheva Y, Zubarovskaya L, Zubarovskaya N, Pichler H, Lawitschka A, Koller E, Keil F, Mayer J, Weinbergerová B, Valent P, and Lion T. Prevalence of fungal DNAemia mediated by putatively non-pathogenic fungi in immunocompromised patients with febrile neutropenia: a prospective cohort study. *J Hem Oncol* 2024, 17: 63-8.

Contact:

Peter Illetschko
Science Communication Manager
St. Anna Children's Cancer Research Institute
1090 Vienna, Zimmermannplatz 10
M: +43 664 5477295
E: peter.illetschko@ccri.at