PERSIMUNE

CENTRE OF EXCELLENCE FOR PERSONALISED MEDICINE OF INFECTIOUS COMPLICATIONS IN IMMUNE DEFICIENCY

Student Project

Can therapeutic drug monitoring of voriconazole prophylaxis in lung transplant recipients improve prevention of fungal infections?

Main area: Medicine
Target group: Medical students with research interest
Type of project: BSc/MSc student project

Project description: Lung transplant recipients are at risk of fungal infections which causes increased morbidity and mortality. The effect of antifungal prophylaxis is debated. Voriconazole is commonly used as prophylaxis and treatment of fungal infections. The correct concentration of voriconazole in blood is important for proper effect. Therapeutic drug monitoring (TDM) is therefore recommended during treatment. However, TDM is not standard procedure when voriconazole is used as prophylaxis. In a previous study, we found no protective effect of voriconazole prophylaxis, and we hypothesize this may be due to low concentrations in blood. Voriconazole has several side-effects and we have previously shown that the majority of patients given voriconazole prophylaxis had to stop prophylaxis early due to side-effects and toxicity. We hypothesize that high concentrations of voriconazole are related to side-effects. We aim to:

- Measure and describe voriconazole concentrations in blood from lung transplant recipients who have received voriconazole prophylaxis without TDM
- Identify patients with low voriconazole concentrations and compare incidence of fungal infections in these patients vs. patients with higher voriconazole concentrations
- Identify patients with high voriconazole concentrations and compare incidence of side-effect leading to discontinuation of voriconazole in these patients vs. patients with lower voriconazole concentrations

Methods used: Patients who have received a lung transplantation at Rigshospitalet from 2010-2019 will be included. Data on voriconazole prophylaxis, fungal infections and side-effects from this cohort are available in PERSIMUNE database and will be used for analysis. Blood samples are available in a biobank and samples taken during voriconazole prophylaxis will be identified and used for measurement of voriconazole concentrations.

About PERSIMUNE: PERSIMUNE (www.persimune.dk) is a multidisciplinary centre of excellence embedded within CHIP and funded by the Danish National Research Foundation. PERSIMUNE works from the hypothesis that across patients with impaired immune function, there is a common pattern of un-discovered risk factors explaining the variation in risk of infectious complications. We aim at understanding the mechanisms explaining the variation in risk using a diverse set of methodologies, including pattern recognition from big data from routine clinical care, studies of host and microbial genetics, imaging, and immunological characterization. These data will be used to develop clinical algorithms aimed at improving the clinical outcomes in patients with various immune dysfunction.

Supervisors: Cornelia Geisler Crone, Marie Helleberg
Email: cornelia.geisler.crone@regionh.dk

REGION H Rigshospitalet

chip Centre of Excellence for Health, Immunity and Infections

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