RACP Foundation Research Awards

FINAL REPORT

Project / Program Title	A discovery study to advance the prediction of infection in patients with haematological malignancy
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Award Received	2019 The Robert Maple-Brown Research Establishment Fellowship
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Administering Institution	Peter MacCallum Cancer Centre
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Funding Period Finish Date:	31 December 2019

PROJECT SUMMARY

Infections are a major cause of death and hospitalisation in patients with blood cancers. Better tools are needed to identify patients at risk for infection in order to prevent them. This project profiled the immune system in patients with a common blood cancer, chronic lymphocytic leukaemia to find a key signal that predicts a patient's future risk for infection.

PROJECT AIMS / OBJECTIVES

Infection is a major cause of death and hospitalisation for patients with haematological malignancy. In the era of immune-based therapies, the interplay between patient, disease and treatment factors has made clinical assessment of infection risk challenging and unreliable. Profiling the immune system may offer a new approach to evaluating risk for infection in patients with malignancy.

This project had the following aims:

1. Determine the epidemiology and outcomes of infection in a well defined cohort of CLL patients treated with targeted agents
2. Pilot systems-level immune profiling in the same cohort
3. Correlate immune data obtained with clinical data to discover/detect a predictive immune profile for episodes of infection

SIGNIFICANCE AND OUTCOMES

1. <u>Provide the worlds best cancer care</u> by identifying an infection risk profile based on an individual's immunology. Similar to a genetic test for cancer risk, an immune risk profile test will arm and empower both patient and health care providers with vital information on infection risk, allowing care to be specifically tailored to an individual.
2. <u>Focus on cancer patient wellbeing</u> by identifying infection risk in cancer patients so that their care can include appropriate and timely infection prevention and treatment measures, which will reduce deaths and hospitalisations from infections among cancer patients.
3. <u>Accelerate discovery and translational research</u> by using cutting edge research platforms (e.g RNA sequencing) to develop an individualised infection risk test, which can be used in the clinic.

Ultimately an immunologic risk profile comprising certain ratios of immune cell markers or signals in a patient's blood can be identified. Future research will involve larger prospective cohort studies to refine and validate predictive immune profiles defined in this project. Therefore this project is a vital first step towards building a simple and quick test that predicts risk for infection using standard hospital laboratory diagnostics and its introduction into clinical practice.

PUBLICATIONS / PRESENTATIONS

An abstract describing the epidemiology and outcomes of infection in CLL patients managed with targeted therapies was selected for an oral presentation at the 29th European Congress of Clinical Microbiology and Infectious Diseases in Amsterdam, 2019.

Future abstracts and publications are planned pending outcome of bioinformatics correlation of immune and clinical data.

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