Research award:
miRNAs as potential biomarkers for biologic treatment response in severe asthma patients

Awarded to: Dr Elena Vorobeva, PhD, Prof Ramesh J Kurukulaaratchy and Prof. Tilman Sanchez-Elsner
Amount: £9,831

Lay summary

Despite many advances in treatment, severe asthma remains a significant burden for many patients and has significant associated healthcare costs. New monoclonal antibody treatments (biologics) helped improve the lives of many severe asthma patients by targeting specific inflammatory cells or messengers including IgE (Omalizumab) and Interleukin-5 (Mepolizumab). However, such drugs are expensive and up to 30% of severe asthma patients fail to respond and require a switch to an alternative biologic drug.

In this pilot study funded by AAIR, we explored the expression of miRNA, small non-coding RNAs which regulate their target genes post-transcriptionally, in the sera of biologic naïve severe-asthma patients that later commenced either Mepolizumab or Omalizumab treatment to determine their association with treatment response. We identified several miRNAs that might serve as potential predictors of the biologics treatment outcome. This will help to make a better, tailored choice of biologic treatment and timely relief from symptoms of asthma leading to better quality of life and reduced economical healthcare burden.

The results will be published as a research letter (in preparation) and are part of the patent (being filed) and of the Pre-award supporting fund application (NIHR, submitted). This work also put me in a position to develop a Junior Fellowship application with a branch-out project on miRNAs as predictors of potential asthma development in offspring of mothers with asthma (A-LUK, submitted), and to have a leading role in developing a further small project related to miRNAs in food allergy for one of our group's PhD students.

Impact

Publications: Research letter (in preparation)

IP: UK patent filed (application number 2419126.4)

External grants:

- Pre-award supporting fund application (NIHR, submitted). Will be followed by NIHR Advanced Fellowship application with a project on the association of miRNAs with biologics response (using this pilot study as preliminary data).
- Junior Fellowship application with a branch-out project on miRNAs as predictors of early-life wheezing and potential asthma development in offspring of mothers with asthma (A-LUK, submitted).

Other:

- A leading role in developing a further small project related to miRNAs in food allergy for one of our group's PhD students.
