Baseline Uric Acid Levels correlate with Disease Severity

Baseline Uric Acid Levels correlate with Disease Outcome

Changes in Uric Acid Levels over time correlate with Disease Severity and Disease Outcome

Conclusions

For optimal clinical decision-making in the treatment of paediatric pulmonary arterial hypertension (PAH), it is crucial to have a reliable, non-invasive and inexpensive biomarker to monitor disease progression. Earlier studies suggest that serum uric acid could have the potential to fulfill such a role. This study aims to evaluate the association of uric acid levels, measured both at baseline and longitudinally during the course of the disease, with disease severity and outcome in children with PAH.

This study includes 81 paediatric patients diagnosed with PAH. Baseline serum uric acid values were correlated with disease severity markers and outcome. The predictive value of longitudinally collected uric acid measurements for disease severity and disease outcome was analysed using linear mixed effects modelling. Finally, the linear development of uric acid levels over time was stratified by outcome and compared.

Baseline serum uric acid levels are associated with a worse clinical state, as reflected by a higher WHO functional class, NT-proBNP levels, mean right atrial pressure, mean pulmonary arterial pressure, pulmonary vascular resistance index, lower TAPSE, and mixed venous saturation.

Patients with higher baseline serum uric acid levels had a significantly (p<0.001) lower transplantation-free survival.

From the 81 patients there were 2563 measurements of uric acid values and disease severity markers collected during follow-up. Analysis shows that the associations at baseline are persistent at any time point during follow-up. Transplantation-free survivors had lower baseline values and a less steeper increase of uric acid levels over time, compared to non-survivors.

This study demonstrates that higher serum uric acid levels are associated with disease severity and mortality in children with PAH, throughout the full course of the disease. Increases in uric acid values during follow-up correlated with worse clinical outcome. Monitoring absolute values and changes of uric acid levels provides valuable information and could help guide decisions in the management of paediatric PAH.

Declaration of interest: none