

MP3-20

Uric Acid As A Biomarker in Paediatric Pulmonary Arterial Hypertension

Leberkühne L.J. (1), Ploegstra M.J. (1), Douwes J.M. (1), Bartelds B. (1), Roofthoof M.T.R. (1), Hillege H.L. (2), Berger R.M.F. (1).

Department of Paediatric Cardiology, Beatrix Children's Hospital, Center for Congenital Heart Diseases, University Medical Center Groningen, Groningen, The Netherlands (1); Department of Epidemiology, University Medical Center Groningen, Groningen, The Netherlands (2).

Introduction: For optimal clinical decision-making in the treatment of paediatric pulmonary arterial hypertension (PAH), it is important to have a reliable, non-invasive and inexpensive biomarker that can be used to monitor disease severity throughout the course of the disease. The aim of this study was to evaluate the association of uric acid levels, at baseline as well as during the course of the disease, with disease severity and outcome in children with PAH.

Methods: This longitudinal study included data of 81 consecutive children from the Dutch National Network for paediatric PH which were prospectively followed according to a standardised protocol, including serum uric acid measurements. Uric acid values at baseline as well as during the course of the disease were correlated with disease severity markers. In addition, the association of uric acid with death or lung-transplantation at baseline and during follow-up was determined.

Results: Higher serum uric acid levels were associated with higher WHO-FC ($\beta=0.234$, $p=0.003$) and NT-proBNP ($\beta=0.236$, $p=0.014$) and lower TAPSE Z-scores ($\beta=-0.663$, $p=0.027$) at baseline. Longitudinal analysis demonstrated that this association remained stable throughout the course of the disease. Lung-transplantation free survivors had a significantly ($p<0.001$) lower value of uric acid at baseline. They also showed a significantly ($p<0.001$) smaller increase in uric acid during follow-up compared to non-survivors (0.004 mmol/l/year vs. 0.014 mmol/l/year). A 50% deterioration of uric acid during follow-up was associated with a 3.9 times higher risk of death or lung-transplantation.

Conclusions: This study demonstrates that higher serum uric acid levels are associated with worsening disease severity and increased mortality risk in children with PAH, an association that remained stable throughout the course of the disease. Monitoring serum uric acid provides valuable information, which could help guide decisions in the management of paediatric PAH.

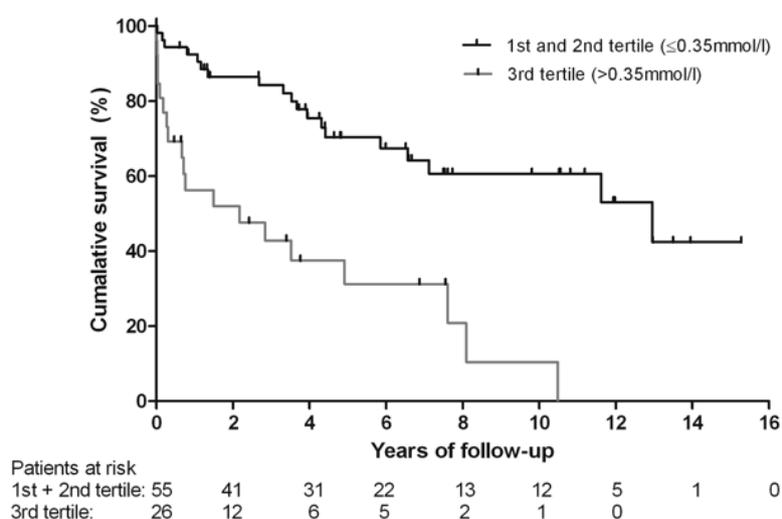


Figure 1: Transplantation-free survival stratified by uric acid levels measured at baseline. The log-rank test showed a significant difference ($p<0.001$) between the groups.