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Does microalbuminuria level correlate with PRISM and PELOD scores in critically ill children and prediction of mortality

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Introduction: Microalbuminuria (MA), a sub-clinical increase in urinary albumin, is a recognized marker of systemic inflammation, and is thought to reflect the glomerular component of a systemic capillary leak. Previous research has shown that sustained MA is associated with the development of organ dysfunction later on and poor outcome in adults. To date, the relationship of MA and organ system dysfunction (OSD) in critically ill children have not been systematically evaluated. The purpose of this study was to examine the relationship between MA and OSD in critically ill children.

Methods: Eligible subjects were patients <16 years and more one month of age, who were admitted to the PICU, and with anticipated to stay >24 hrs. Patients with primary nephropathies or gross hematuria were excluded. Microalbuminuria (ACR) were obtained from each patient at admission (ACR1), at 12hrs (ACR2) and at 24hrs (ACR3) and expressed in mcg/mg of creatinine. Cut off for significant microalbuminuria was taken as 180mcg/mg. Daily PELOD scores were calculated for each patient and PRISM score at 12 and 24 hours. Correlations between PRISM and PELOD with microalbuminuria were calculated. Also we tried to find out survivor and non-survivor correlation with microalbuminuria.

Results: The sample included 138 patients, with sepsis with a median age of 38 months (range 1 to 192), median weight 13kgs (range 2.4 to 69), median PRISM score in patient with microalbuminuria levels >180mcg/mg was high 8 (range 6 to 12) in comparison to others in which levels was <180mcg/mg 4 (range 2 to 8) and median PELOD scores was high 21 (range 12 to 23) in group with microalbuminuria levels >180mcg/mg to others with levels <180mcg/mg 9 (range1 to 20). There is also statistically significant difference between types of sepsis in case of microalbuminuria at admission, 12hrs and 24hrs P=0.01 (P<0.05). Using Mann-Whitney test used for comparison between 2 groups (survivors vs. non-survivors) showed that there is no statistically significant difference between outcome in case of microalbuminuria on admission P=0.256 (P>.05). But, there is statistically significant difference between outcome in case of microalbuminuria at 12hrs P=0.037 (P<0.05) and 24hrs P=0.016 (P<0.05).

Conclusions: This study demonstrates a significant correlation between microalbuminuria and the degree of organ system dysfunction in critically ill children. It also suggests that rising microalbuminuria is predictive of worsening organ dysfunction and increased risk of mortality if the trends were gradually increasing. Microalbuminuria can be rapidly determined, is inexpensive, blood sparing, and it may have a role in the clinical assessment of the critically ill child.

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