

Abstract Submission No.: A-0346

Interplay of trace elements & cardiovascular status in pediatric chronic kidney disease patients

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Case Study : Background and Aims: Trace elements blood levels are very important in cardiovascular structure & function especially in chronic kidney disease (CKD) patients. Based on this knowledge, we studied trace elements blood levels & cardiovascular events which was identified as systolic, diastolic blood, & echocardiographic findings. Method: A cross sectional study, that was conducted on 60 pediatric CKD patients on regular hemodialysis (CKD5d), and similar number of age & gender matched controls, where serum levels of zinc (Zn), copper (Cu), lead (Pb), cadmium (Cd), & Manganese (Mn) were measured and correlated to systolic and diastolic blood pressure & echocardiographic findings (Left ventricular dysfunction, & ejection fraction % {EF%}) Results: The mean(\pm SD) age of our studied subjects was 8 (2.08) years, with mean(\pm SD) dialysis duration of CKD patients of 2.33 (3.28) years. All controls had normal serum levels of trace elements, while patients had significantly low serum Cu and Zn levels than controls. The mean EF % (\pm SD) was 40.2 (\pm 20.3). EF % correlated negatively with both Cu & Cd serum levels, where patients who had higher serum copper and cadmium levels had lower EF%, meanwhile higher serum levels of Cu & Pb were associated with higher diastolic blood pressure. Conclusion: CKD pediatric patients have an imbalanced trace elements status & abnormal cardiac status. Serum Cu & Cd levels had significant effects on cardiac status in our CKD5d pediatric patients.

TE & CVD in CKD5d.png

