Differential use of cardiac troponin T versus I in hemodialysis patients

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BACKGROUND: Cardiac troponin T (cTnT) is frequently elevated in asymptomatic hemodialysis (HD) patients and predicts increased cardiovascular morbidity and mortality. Compared to cTnT, cardiac troponin I (cTnI) has a shorter half-life. How this influences its diagnostic reliability in chronic HD patients is only partially known.

PATIENTS AND METHODS: First, in a cross-sectional study cardiac troponins were measured in 31 asymptomatic HD patients. A third-generation cTnT assay was used. The rate of false positive tests and the intraindividual variability were determined. Second, in a retrospective analysis over 12 months all acute events with clinical suspicion for acute coronary syndrome (ACS) were analysed in the same patients to determine the diagnostic power of cTnT by receiver-operating curve (ROC) plot.

RESULTS: Cross-sectional study: 9 of 52 (17%) cTnT and 0/52 cTnI (0%) tests were positive in asymptomatic HD patients with a low intraindividual variability. Retrospective analysis: 16 acute clinical events with determination of cTnT were recorded, and in 4/16 an ACS was diagnosed. Using a cut-off level of 0.1 microg/l, the cTnT test reached a sensitivity of 100%, a specificity of 42%, a positive predictive value of 36% and a negative predictive value of 100%, using a cut-off level of 0.2 microg/l the corresponding values were 75%, 58%, 38% and 88%. CONCLUSIONS: Cardiac TnT, but only rarely cTnI, is elevated in a significant number of asymptomatic HD patients. For diagnosis of ACS in HD patients, a combination of cTnT and cTnI may be used, since the former has higher sensitivity and the latter higher specificity. A higher threshold value for cTnT in HD patients could further increase its diagnostic accuracy.