Cystatin C and Acute Kidney Injury in Acute Heart Failure; Impact on Hospital Course

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BACKGROUND:

Acute heart failure (AHF) is a life- threatening disease with a high mortality rate. The cardio-renal syndrome (CRS), or the relationship between the heart and the kidney, has gotten a lot of attention from cardiologists and nephrologists because of its connection to poor prognosis. Renal impairment is one of the most important predictors of outcome in both chronic heart disease and AHF. The Serum creatinine is used to assess renal dysfunction. Age has a big impact on serum creatinine, and it's linked to other factors like sex and muscle mass. Finding more sensitive markers of kidney damage and function is a top priority due to the disadvantage of the existing marker creatinine. Several new AKI biomarkers are being studied. These can aid in early diagnosis and prognosis assessment.

Cystatin C, a CST3 gene-coded protein, is a kidney function biomarker that has also been investigated for its role in early detection of acute kidney injury.

OBJECTIVE:

The aim of our study was to evaluate the use of cystatin C as a marker of acute kidney injury (AKI) in patients with acute heart failure (AHF) and its relation to hospital course (i.e., duration of hospital stays and in-hospital mortality).

METHODS:

Two hundred patients hospitalized for AHF had measurements of cystatin C on admission and at 48 hours. We assessed the incidence of a rise in cystatin C between the two measurements and evaluated the effect of an increase in cystatin C on hospital course.

RESULTS

The population was on average 66.4 years old and 49% were female. On admission, median cystatin C was 1.30 mg/L (interquartile range 1.03– 1.67 mg/L). A rise in cystatin C by >0.3 mg/L within 48 h after hospitalization (AKIcysC) occurred in 32 (16%) of patients and resulted in 3 days (P = 0.01) significant longer hospital stay while in- hospital mortality was more but could not reach statistical significance, odds ratio 3.79 (P = 0.239).

CONCLUSION

Cystatin C appears to be a useful marker of early AKI in patients hospitalized for AHF. A decline in renal function detected by Cystatin C during the first 48 hours after hospitalization occurs frequently in AHF and has a detrimental impact on hospital course.

KEYWORDS

Cystatin C, acute kidney injury, acute heart failure hospital course

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