

Abstract:

The population of patients with end-stage kidney disease treated by dialysis is particularly susceptible to cardiovascular complications and associated mortality. Even at the initiation of dialysis therapy, the vast majority of patients exhibit left ventricular hypertrophy, and the dialysis procedure itself can lead to the occurrence and exacerbation of regional wall motion abnormalities (RWMA). However, it is not clear what factors determine the occurrence of these disorders and whether they have a negative impact on patients' prognosis, especially cardiovascular prognosis.

Taking the above into consideration:

- The occurrence of RWMA was evaluated in 78 patients with end-stage renal failure undergoing chronic hemodialysis, both before and during the dialysis procedure.
- The relationship between the occurrence and severity of RWMA during hemodialysis and selected clinical and biochemical indicators was analyzed.
- The risk of mortality relative to the exacerbation of RWMA and other collected clinical and biochemical indicators was assessed in the studied population of hemodialysis patients.

Echocardiography was performed 15 minutes before the planned dialysis, one hour before its completion, and 15 minutes after the procedure. RWMA induced by hemodialysis was defined as the presence of at least hypokinesia in a minimum of 2 segments. Basic clinical data, including blood pressure and heart rate, pulse pressure, ultrafiltration rate, and biochemical parameters such as hemoglobin, potassium, calcium, phosphorus, parathyroid hormone, and urea, were collected for analysis to assess the adequacy of hemodialysis based on the Kt/V index.

RWMA occurred in 36% (n=28) of patients before hemodialysis, and it worsened during hemodialysis in 24% (n=19) of patients, with 6% (n=5) experiencing newly developed dysfunction. The severity of RWMA induced by hemodialysis was more frequent in patients with a low left ventricular ejection fraction, presence of diabetes, presence of heart valve calcification, and lower ultrafiltration rate. During the observation period (2.5 years), 31 individuals (39.7%) died, resulting in an annual mortality rate of 15.8%. There were no differences in mortality between groups with and without RWMA exacerbation. Deceased patients were characterized by older age, more frequent occurrence of diabetes mellitus, chronic heart failure, and lower left ventricular ejection fraction.

Based on the obtained results, the following conclusions were formulated:

1/ Regional wall motion abnormalities (RWMA) assessed by echocardiography were present in a significant number of patients with end-stage kidney disease undergoing hemodialysis (36%), and the dialysis procedure increased this number to 40%.

2/ Nearly 1/4 of patients experienced exacerbation of RWMA by hemodialysis session, which was associated with selected clinical and biochemical parameters, especially the presence of diabetes and left ventricular dysfunction.

3/ In the studied group of hemodialysis patients, those with worsening RWMA induced by the dialysis procedure did not have a higher risk of death.