KIDNEY DYSFUNCTION IN PATIENTS WITH CHRONIC HEART FAILURE

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ABSTRACT: Chronic heart failure (CHF) affects various organs and tissues, often becoming the direct cause of death in affected individuals. Among the target organs are the kidneys. Research shows that even the earliest subclinical signs of kidney dysfunction are an independent risk factor for cardiovascular complications, mortality, and recurrent events in patients with cardiovascular disease.

Key words: chronic heart failure, kidney dysfunction, cardiovascular disease

Objective of the Study: To analyze the course of chronic heart failure and its relationship with renal functional status in patients with CHF and AF.

Study Materials: A total of 50 patients with CHF were examined (30 men, 20 women; mean age: 60 ±12 years).
The causes of CHF were:

10. Arterial hypertension 10 patients (24%)
11. Coronary artery disease (CAD) 6 patients (32%)
12. Combination of both 9 patients (44%)
13. Previous myocardial infarction 25 patients (49%)

The severity of CHF symptoms was assessed using the NYHA classification, and the clinical condition was evaluated using the SHOKS (Clinical Condition Assessment Scale).

All patients underwent echocardiography in M-mode using a 3□5 MHz probe in the left lateral position.

Serum creatinine (Cr) levels were measured, and glomerular filtration rate (GFR) was calculated using the CKD-EPI formula.

Patients were divided into two groups based on GFR:

- Group 1: 10 patients with GFR <60 ml/min/1.73 m²
- Group 2: 40 patients with GFR ≥60 ml/min/1.73 m²

Statistical analysis was performed using STATISTICA 6.0 (StatSoft, USA).

Results:

- Mean GFR was 67.6±18.7 ml/min/1.73 m²
- In 23 patients (33%), GFR was <60 ml/min/1.73 m²

- Left ventricular ejection fraction (LVEF) was preserved (>50%) in 48 patients (68%)
- Patients with impaired kidney function had larger left atrial diameter
- Permanent atrial fibrillation (AF) (>1 year) was observed in 37% of patients
- 63% had sinus rhythm

Mean GFR by NYHA class:

- NYHA I: 85.3±7.44 ml/min/1.73 m²
- NYHA II: 75.2±16.34 ml/min/1.73 m²
- NYHA III: 62.8±7.3 ml/min/1.73 m²
- NYHA IV: 57.6±5.1 ml/min/1.73 m²

Patients with AF had lower GFR than those without AF (56.6±15.3 vs. 67.2±17.6 ml/min/1.73 m², $p < 0.001$)

SHOKS scale results: Reduced GFR was associated with worse clinical condition:

4. GFR <60: 8.4±0.57 points
5. GFR ≥60: 5.7±0.53 points

Symptom assessment showed no differences in severity of dyspnea, fatigue, or palpitations between patients with sinus rhythm and AF. The only differing symptom was edema, which was more pronounced in patients with AF.

Additional echocardiographic findings:Mean LVEF: 56.7±10.4%. LVEF was lower in patients with kidney dysfunction and AF (54.6±11.7% and 56.8±9.4%, respectively, p=0.03). Left atrial diameter was greater in these patients (37.5±4.1 mm vs. 36.9±3.2 mm, p=0.02). Right ventricular end-diastolic dimension was larger (3.31 [2.93□3.77] cm, p=0.003)

Conclusions: Renal dysfunction and NYHA class were independently associated with the presence of atrial fibrillation. Kidney dysfunction predisposes to atrial fibrillation in patients with CHF. Clinically, patients with CHF and AF had more pronounced edema compared to those with sinus rhythm. Echocardiographically, these patients showed larger left atrial size and greater right ventricular diameter.

LITERATURE

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