

Renal infarction is associated with acute kidney injury in patients with cardiac amyloidosis

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Systemic amyloidosis is a major cause of renal injury, mostly due to direct kidney damage caused by deposits of abnormal protein called amyloid, in the kidney parenchyma. In patients with cardiac amyloidosis, renal infarction is associated with acute kidney injury according to a new study in *Mayo Clinic Proceedings*, published by Elsevier. Investigators recommend that a diagnosis of renal infarction should be systematically considered in patients with unexplained acute kidney injury in the context of cardiac amyloidosis.

Amyloidosis is a heterogeneous group of diseases, classified according to the main precursor protein forming the [amyloid fibrils](#). The most prevalent types are acquired systemic immunoglobulin light chain amyloidosis (AL amyloidosis); circulating acute-phase reactant serum amyloid A protein amyloidosis (AA amyloidosis); non-mutated or wild-type transthyretin amyloidosis; and hereditary forms caused by genetic variants which encode abnormal proteins. Cardiac involvement (the most relevant prognosis factor) is increasingly being diagnosed in these [patients](#) and is frequently accompanied by significant dysfunction of other major organs. Amyloid cardiomyopathy may be associated with thromboembolic events, mostly due to [atrial fibrillation](#), leading to intracardiac thrombus formation, or promoted by the hypercoagulability state observed in patients with nephrotic syndrome.

"The prevalence of renal infarction and the risk factors for this condition

have never before been assessed in this patient population," explained lead investigator Vincent Audard, MD, Ph.D., Service de Néphrologie et Transplantation, Groupe Hospitalier Henri Mondor-Albert Chenevier, Université Paris Est Créteil, Créteil, France. "Computed tomography scans and [magnetic resonance imaging](#) are the gold standard method for confirming renal infarction but may be unsuitable in patients with systemic amyloidosis because these patients frequently exhibit impaired renal function and/or have heart devices."

In this observational study, investigators at the Amyloidosis Referral Center of Henri Mondor Hospital assessed the frequency of renal infarction in 87 patients with confirmed cardiac amyloidosis who underwent 99mTc-labeled DMSA renal scintigraphy from October 1, 2015, through February 28, 2018. Three groups of patients were defined on the basis of the underlying amyloidosis disorder: AL amyloidosis in 24 patients; mutated-transthyretin amyloidosis in 24 patients; and wild-type transthyretin amyloidosis in 39 patients.

One of the study's most significant findings is that acute kidney injury in a context of cardiac amyloidosis may be due to renal infarction. The prevalence of renal infarction was relatively high (20.7 percent) among the 87 patients with a definitive diagnosis of confirmed cardiac amyloidosis. These cases were evenly distributed between the three groups. At the time of renal scintigraphy, the frequency of acute kidney injury was higher in patients with renal infarction, and the likelihood of renal infarction diagnosis according to the presence or absence of acute kidney [injury](#) was 47.1 percent and 14.5 percent, respectively.

The investigators suggest that several factors, including direct [kidney](#) damage due to deposits of amyloid and indirect mechanisms of damage, such as renal failure due to low cardiac output, may be involved in the [renal failure](#) observed in these patients.

This study showed that after excluding heart transplant cases, patient survival did not differ significantly between patients with and without a diagnosis of renal infarction. By contrast, the authors found that death- and heart transplant—censored renal survival was significantly lower in patients with renal infarction.

"Overall, these data suggest that renal infarction should probably be added to the spectrum of renal manifestations related to systemic amyloidosis in cases of heart involvement," concluded Dr. Audard. "We recommend that a diagnosis of renal infarction should be systematically considered in patients with unexplained [acute kidney injury](#) in the context of cardiac amyloidosis."

More information: Julien Dang et al, Renal Infarction and Its Consequences for Renal Function in Patients With Cardiac Amyloidosis, *Mayo Clinic Proceedings* (2019). [DOI: 10.1016/j.mayocp.2019.02.012](https://doi.org/10.1016/j.mayocp.2019.02.012)

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