Renal impairment and worsening of renal function in acute heart failure: can new therapies help? The potential role of serelaxin.

Renal dysfunction is a frequent finding in patients with acute heart failure (AHF) and an important prognostic factor for adverse outcomes. Worsening of renal function occurs in 30-50% of patients hospitalised for AHF, and is associated with increased mortality, prolonged hospital stay and increased risk of readmission. Likely mechanisms involved in the decrease in renal function include impaired haemodynamics and activation of neurohormonal factors, such as the renin-angiotensin-aldosterone system, the sympathetic nervous system and the arginine-vasopressin system. Additionally, many drugs currently used to treat AHF have a detrimental effect on renal function. Therefore, pharmacotherapy for AHF should carefully take into account any potential complications related to renal function. Serelaxin, currently in clinical development for the treatment of AHF is a recombinant form of human relaxin-2, identical in structure to the naturally occurring human relaxin-2 peptide hormone that mediates cardiac and renal adaptations during pregnancy. Data from both pre-clinical and clinical studies indicate a potentially beneficial effect of serelaxin on kidney function. In this review, we discuss the mechanisms and impact of impairment of renal function in AHF, and the potential benefits of new therapies, such as serelaxin, in this context.