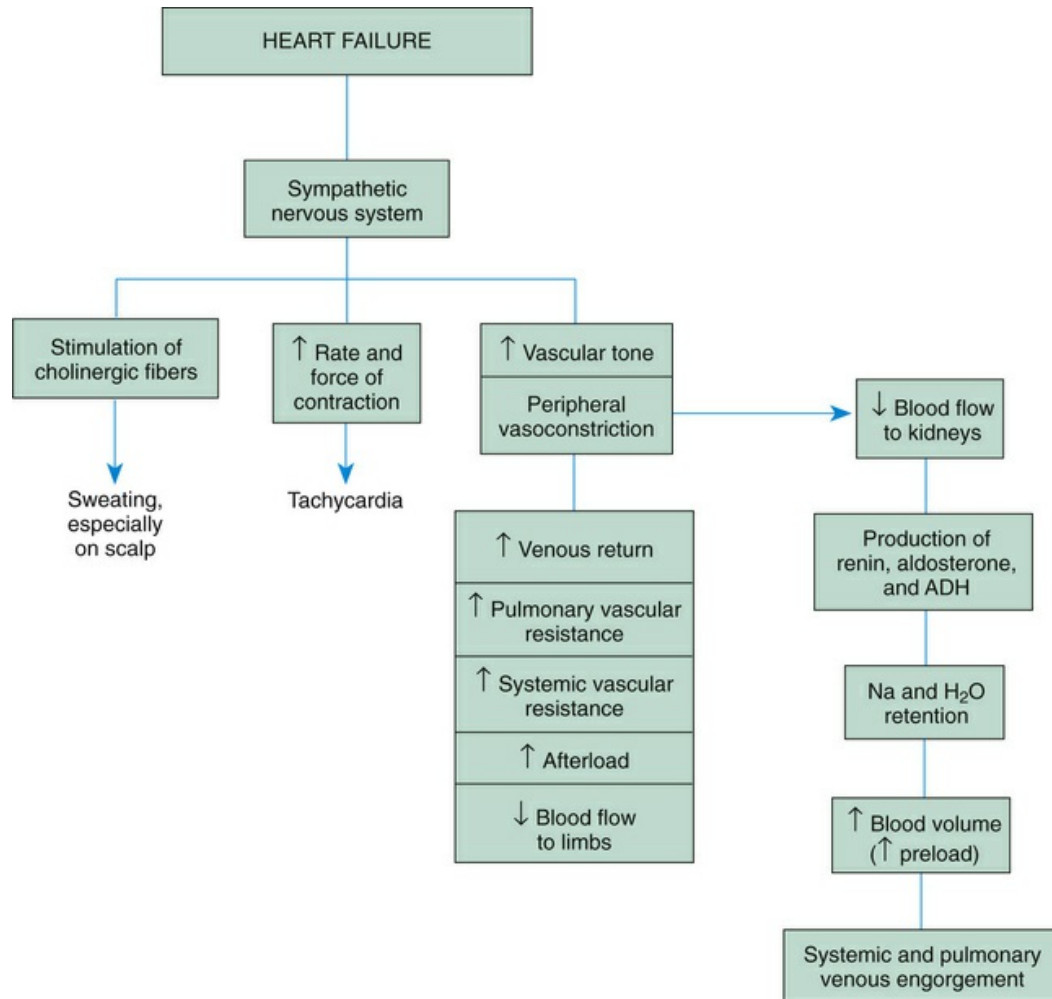


muscle becomes damaged. Despite compensatory mechanisms, the heart is unable to maintain an adequate cardiac output. Decreased blood flow to the kidneys continues to stimulate sodium and water reabsorption, leading to fluid overload, increased workload on the heart, and congestion in the pulmonary and systemic circulations (Fig. 23-7).



**FIG 23-7** Pathophysiology of heart failure. *ADH*, Antidiuretic hormone.

## Clinical Manifestations

The signs and symptoms of HF can be divided into three groups: (1) impaired myocardial function, (2) pulmonary congestion, and (3) systemic venous congestion (Box 23-5). Because these hemodynamic changes occur from different causes and at differing