Preface

Congestive heart failure (CHF) is by far the most common underlying cause in most patients who present with volume overload; liver and/or renal failure account for most of the remainder. CHF is a major cause of morbidity and mortality in the Western world, and several epidemiologic studies have estimated the prevalence to be 8–20 per 1,000 population. There are at least two reasons to believe that the incidence and prevalence of CHF is likely to increase dramatically in the coming years. First, the prevalence of CHF increases exponentially with increasing age. The increase in life expectancy seen in most parts of the world has resulted in significant demographic shifts, and the number of elderly individuals has risen dramatically in many developed societies. Second, there has been a progressive reduction in mortality in individuals with coronary artery disease and this translates into a larger pool of individuals with myocardial dysfunction. Hence, the health care costs associated with the management of CHF are likely to continue to increase.

Renal salt and water retention is the key pathophysiologic mechanism underlying the volume overload in patients with congestive heart failure. Hence, diuretic therapy forms the cornerstone of the medical management of patients with CHF. However, a small proportion of patients, particularly those with severe impairment of cardiac function, develop diuretic-resistant volume overload. This may occur over a few hours, for example, following open heart surgery, or over weeks and months, as in individuals with chronic CHF. The subsets of patients who develop diuretic resistance have a particularly poor prognosis; indeed, hyponatremia and prerenal azotemia,

biochemical accompaniments of diuretic-resistant CHF, have consistently been associated with a worse outcome.

Of the various therapies that have been attempted for the treatment of diuretic-resistant CHF, ultrafiltration strategies hold particular promise. Similar considerations suggest that ultrafiltration can play an important role in other diuretic-resistant volume overload states (i.e. cirrhosis and nephrotic syndrome). Tremendous advances have been made in the technique of extracorporeal ultrafiltration, and hence, it is used almost exclusively for the acute management of volume overload states. The immediate benefits of extracorporeal ultrafiltration are obvious, and it is thus often used as a bridge to transplantation. The long-term advantages in individuals who are not candidates for transplantation are less clear. Thus, several investigators have proposed the use of ambulatory ultrafiltration in these individuals, specifically with the use of peritoneal dialysis.

In this special issue of *Cardiology*, we present a series of papers that summarize the current state of knowledge regarding the pathophysiology of salt and water retention in CHF, diuretic resistance, the experience with and technical issues related to extracorporeal ultrafiltration in various clinical settings and ambulatory ultrafiltration. Given the likelihood that the number of patients with diuretic-resistant CHF will increase in the coming years, we hope that this compendium of information will trigger further hypothesis-driven research into this previously neglected but fundamentally important clinical situation.

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