Acute Cardiac Overload Secondary to Aortocaval Fistula Effectively Treated with Continuous Hemofiltration

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Dear Sir,

Continuous hemofiltration has actually become an ordinary technique in most intensive care units. Patients who benefit most from continuous hemofiltration are those with acute renal failure, fluid overload and hemodynamic instability [1, 2]. Fluid is gradually removed in a period of several hours or days without altering hemodynamic stability, thus allowing better caloric and hydroelectrolytic management [3].

We report the case of a patient with an aortic aneurysm who developed an aortocaval fistula leading to acute cardiac overload and acute renal failure. Aggressive ultrafiltration carried out by a continuous hemofiltration technique allowed satisfactory surgical management of the aneurysm.

A 76-year-old male patient, hypertensive and hyperuricemic, consulted because of moderate to severe dyspnea, ascites and edema. He had suffered a myocardial infarction 11 years before. A diagnosis of abdominal aortic aneurysm was made on April 1991. No surgical procedure was performed because of his advanced age. Despite medical management with cardiotonics and diuretics, the patient developed progressive distal edemas and ascites with increasing dyspnea. An abdominal CT scan revealed an aortic aneurysm, 12.7 × 11.5 cm in size, below the renal arteries down to the aortic bifurcation. The inferior vena cava showed early filling with radiologic contrast suggested the existence of a fistula connected to the aneurysm. This was confirmed by arteriography. Upon admission to the intensive care unit, the patient was dyspneic, with jugular vein ingurgitation (++) and a BP of 120/70 mm Hg. Rapid atrial fibrillation was accompanied by bilateral basal rales. A prominent abdominal pulsation was evident, and auscultation revealed a strong systolic bruit. Chest roentgenogram showed cardiomegaly (2/4), Kerley B lines and a redistribution of pulmonary blood flow. Arterial blood gases were: pO2: 68 mm Hg; pCO2: 45 mm Hg; HC < ¾: 29 mmo1; SaO2: 94%. Echocardiography revealed a hyperdynamic state with significant right atrial and ventricular dilatation secondary to fluid overload. Systolic function was normal.
Three hours later, the patient remained oliguric with progressive dyspnea and hypotension. The worsening clinical state and arterial blood gas profile led to the diagnosis of an acute pulmonary edema which required respiratory assistance. A venous-venous pump-assisted hemofiltration with a hollow-fiber polysulfone hemofilter was initiated. An aggressive ultrafiltration was done which led to a negative fluid balance of 4,600 ml on the first day and 6,000 ml on the second day. The procedure was hemodynamically well tolerated, and no side effects were observed. The clinical evolution was satisfactory, with improvement in both arterial gases and radiologic findings. The stable clinical and hemodynamic state of the patient allowed the surgical correction of his aneurysm. An aortic aneurysmectomy and the closing of the aortocaval fistula (1 cm in diameter) were undertaken. An aortobifemoral bypass was also done. Finally, progressive clinical recovery was observed during the postoperative period, with serum creatinine of 70.7 µmol/l before hospital discharge.

Acute renal failure in a critically ill patient appears generally in the context of a multisystemic failure requiring global therapeutic management. Various continuous renal replacement systems occupy a central therapeutic role in the management of patients with acute renal failure, fluid overload and hemodynamic instability. Gradual fluid removal and caloric replacement are the two principal objectives of this method [3].

Our patient suffered acute cardiac overload secondary to an aortocaval fistula and oliguric acute renal failure, and required an aggressive ultrafiltration. Surgical correction was done when progressive clinical improvement was obtained after ultrafiltration.

In conclusion, this case shows that continuous hemofiltration has an important role in the therapeutic management in those situations involving patients with acute renal failure and acute life-threatening cardiac overload secondary to increased venous return wherein hemodynamic instability is present. Aggressive ultrafiltration should be undertaken to obtain a positive clinical outcome.

References

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