

Selected Study Highlights of Ultrafiltration (UF) and Aquapheresis in Heart Failure

Study Name	Study Type & Inclusion Criteria	Pts	Conclusion(s)
<i>UNLOAD</i>	Randomized, multicenter, multiple substudies, aquapheresis vs. standard therapy (diuretics)	100/100	<ul style="list-style-type: none"> • Enrollment complete. • Follow-up underway. • Publications expected early 2006.
<i>Costanzo, J Card Fail, Vol. 10 No. 4 Suppl. 2004 S78 220.</i>	Prospective, case series, Early UF in Diuretic Resistance	19	<ul style="list-style-type: none"> • Early treatment strategy with aquapheresis effectively and safely decreases length of stay and readmissions. • Clinical benefits persist at 3 months after treatment. • 68% of patients were discharged ≤ 3 days. • No patients readmitted within 30 days.
<i>Bart, J Card Fail, Vol. 10 No. 4 Suppl. 2004 S23 020</i>	Randomized, Early UF vs. Diuretics	40	<ul style="list-style-type: none"> • Aquapheresis is effective, safe and can be applied in a variety of community-based hospitals. • Over 4 times reduction in CHF symptoms • Cumulative fluid removal is nearly 2 ½ times greater than that achieved by aggressive use of diuretics. • Not associated with adverse hemodynamic or lab sequelae.
<i>Sheppard, J Card Fail. 2004 Oct;10(5):380-3</i>	Retrospective, case series, FC III-IV	19	<ul style="list-style-type: none"> • Suggests that UF is a safe, feasible therapy. • Important option for patients with severe and refractory CHF. • Number of patients considered inotrope-dependent reduced from 86.4% to 36.8% • Number of CHF hospitalizations during follow-up was reduced from 2.6 to 0.3. • NYHA class improved from 4 to 3.1
<i>Raman, Int J Artif Organs. 2003 Aug;26(8):753-7</i>	Randomized, case series, CV Surg	61/57	<ul style="list-style-type: none"> • Hemofiltration during CPB attenuates postoperative anemia, thrombocytopenia and hypoalbuminemia. • Appears to decrease post-operative pulmonary complications.
<i>Jaski, Journal of Cardiac Failure 2003 9(3);227-231</i>	Prospective, case series, FC III	21	<ul style="list-style-type: none"> • Rapid removal of extracellular and intravascular fluid volume excess can be safely achieved via peripherally inserted ultrafiltration. • Primary fluid removal endpoint achieved in 92% of patients. • No major adverse events occurred. • Could be used in any setting where patients normally receive IV drug therapy. • 3 patients treated as outpatients. • Early application could obviate the need for hospitalization.
<i>Marenzi, J Am Coll Cardiol 2001;38:4:963-968</i>	Prospective, case series, FC III	24	<ul style="list-style-type: none"> • Subtraction of plasma water by UF in rCHF is associated with hemodynamic improvement. • Hypotension does not occur when plasma refilling rate is adequate to prevent hypovolemia.
<i>Agostoni, Am J Med. 1994 Mar;96(3):191-9</i>	Randomized, UF vs. IV bolus Lasix	8/8	<ul style="list-style-type: none"> • Favorable circulatory and ventilatory adjustments. • Improved functional capacity of these patients. • The improvement continued 3 months after the procedure.
<i>Pepi, Br Heart J. 1993 Aug;70(2):135-40.</i>	Randomized, controlled FC II-III	12/12	<ul style="list-style-type: none"> • Variations due to UF in the ventricular filling pattern, lung water content, and functional performance persisted for three months in all patients. • None of these changes was detected in the control group.
<i>Agostoni, J Am Coll Cardiol. 1993 Feb; 21(2):424-31</i>	Randomized, controlled, FC II-III	18/18	<ul style="list-style-type: none"> • Significant reductions in right atrial pressure, pulmonary wedge pressure, cardiac index, extravascular lung water. • Significant increases in lung function, ventilation, tidal volume • None of these were recorded in the control group.
<i>Marenzi, Am J Med. 1993 Jan;94 (1):49-56</i>	Prospective, class II - IV	32	<ul style="list-style-type: none"> • Correlation between changes in these circulatory and hormonal variables and changes in diuresis and natriuresis. • UF is able to interrupt the humoral-hemodynamic vicious circle.
<i>Rimondini, Am J Med. 1987 Jul;83(1):43-8</i>	Prospective, case series, FC IV, diuretic resistant	11	<ul style="list-style-type: none"> • Promoted relief of dyspnea and of clinical and radiographic evidence of lung congestion and pleural effusion • Reduced the dependent edema and abdominal girth

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Complete References

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