

This is a Fresenius Medical Care summary of:

A multicenter feasibility study on ultrafiltration via a single peripheral venous access in acute heart failure with overt fluid overload

Morpurgo M et al. Italy, *Int J Cardiol.* 2017;240:253-257

Introduction

For patients with acute heart failure, extracorporeal ultrafiltration provides a controlled, physiological means of fluid removal. However, its use in everyday clinical practice has been limited by its requirements for Intensive Care Unit admission and the placement of a central venous catheter. A newly developed minimally-invasive ultrafiltration device, the Chiara system, may solve these issues since it only requires a short, 17G single-lumen cannula inserted in a peripheral arm vein.

Objective

The aim of this study was to assess the feasibility of the Chiara system for the treatment of acutely decompensated chronic heart failure in the clinical setting.

Design

This multicentre, prospective, observational, feasibility study was conducted in six hospitals in Italy. The Chiara system was used to deliver consecutive ultrafiltration treatments via a single-lumen cannula into the best approachable peripheral vein. Ultrafiltration session length and rate was at the discretion of the physician. The primary endpoint was for the system to achieve an ultrafiltration session of ≥ 6 h, with an ultrafiltration rate ≥ 100 ml/h via the peripheral access.

Results

Fifty-five patients with acutely decompensated chronic heart failure were included in the study and had a mean estimated fluid overload of 8.2 ± 4.5 kg (range 4-30 kg) at baseline. In total, 103 ultrafiltration sessions (mean 1.9 ± 1.7 treatment/patient) were performed, of which 92 (89%) sessions prolonged >6 h.

- Median length of ultrafiltration treatment was 14 h (interquartile range 7-21)
- Cumulative ultrafiltrate was 3266 ± 3088 ml, removed at a mean ultrafiltration rate of 183 ± 30 ml/h
- Mean withdrawal flow rate from the vein was 70 ± 20 ml/min, and mean re-injection flow rate was 98 ± 26 ml/min
- Ultrafiltration sessions lasted 8 h (interquartile range 7-8 h).

There were no complications related to cannula insertion or ultrafiltration methods. Asymptomatic, transient heparin-induced thrombocytopenia was reported in one patient.

Conclusion

The Chiara system can safely and effectively be used in the clinical setting in patients with acute heart failure for adequate fluid removal through a single peripheral vein.