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Title **Albumin Dialysis and Molecular Adsorbent Recirculating System (MARS®) in the Treatment of Liver Failure**

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Aim

To assess the medical efficacy and safety of extracorporeal albumin dialysis using the MARS® system in treating acute liver failure (ALF) and acute-on-chronic liver failure (AoCLF); and to estimate the cost of this technology versus standard medical treatment.

Conclusions and results

Eight randomized clinical trials (RCTs), 1 meta-analysis, and 2 cost-effectiveness studies were selected. The presence of heterogeneity and small sample size were observed in many of the studies included, which hindered proper evaluation of the technique. The MARS® system reduces mortality nonsignificantly, both in patients with acute and those with acute-on-chronic liver failure. Its principal indication would be in patients with severe liver failure, while the organ regenerates or is transplanted. Its use should, in all cases, be limited usually to sessions of 6 to 8 hours daily. This technique can be considered safe and well-tolerated by patients, with adverse effects similar to those that appear in the control group. In addition, it brings about favorable hemodynamic changes in patients, reduces the grade of hepatic encephalopathy and that of plasma concentration of bilirubin and creatinine, though these levels tend to rise when treatment is halted. Bearing in mind that each patient received 3 to 5 sessions, the cost of the technique ranged from 6300 euros (EUR) to EUR 10 500 per patient. The MARS® system yielded a savings of approximately EUR 4000 to EUR 6000 per surviving patient, with the cost per quality-adjusted life-year (QALY) gained being EUR 47 171.

Recommendations

Despite the abundant literature on the use of the MARS® system in liver failure, few quality studies have been done, with many of these displaying methodological limitations. Accordingly, uncertainty continues to surround the efficacy of this technique in treating ALF and AoCLF, and practice guidelines fully supported by scientific evidence cannot as yet be established. If the technique is introduced in the health system, it should be in a restricted way and in selected centers and patients.

Methods

A systematic review was conducted of the scientific literature published from January 1995 to August 2008. From among the papers yielded by the bibliographic search, only those were selected that met a series of selection criteria (study design, patient characteristics, and outcome variables). Data were then extracted and the evidence summarized.

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