

MEETING ABSTRACT

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Teicoplanin pharmacokinetics during albumin dialysis

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Background

Albumin dialysis (AD) is a therapeutic option in severe cholestatic liver failure. However, it can significantly enhance drug elimination. Pharmacokinetic data on antimicrobial agents administered under this clinical condition are very sparse. Teicoplanin (TP) is a large glycopeptide, containing six compounds with a molecular weight between 1,500 and 1,900 Da. TP has a similar spectrum of activity and similar efficacy compared to vancomycin. It is active against a variety of bacteria, such as Streptococci, *Staphylococcus aureus* including methicillin-resistant *S. aureus* (MRSA), *Enterococcus faecalis* and *E. faecium*. TP is eliminated by the kidneys with a terminal half life of 80–180 h. Its protein binding is ~90%.

Methods

TP plasma concentrations were measured in a 30-year old critically ill patient (body weight 50 kg), who was treated with albumin dialysis because of severe cholestatic liver failure with refractory pruritus and obtained TP because of recurrent gram-positive sepsis. Albumin dialysis was performed with the molecular adsorbent recirculating system (MARS). Two separate cycles of AD were analysed.

Results

After a 1,200 mg loading dose, doses of 1,200 and 1,000 mg on day 2 and 3, respectively, were administered during 2 cycles of AD for achieving TP trough levels above 10 µg/ml, which are recommended for most infections. During the first and the second AD

cycle, the TP peak concentrations amounted to 98.7 and 99.8 µg/ml, the trough concentrations 27.0 and 15.7 µg/ml, the half-life was 4.6 and 6.4 hours, the apparent volume of distribution 0.28 and 0.32 L/kg and the TP clearance 43 and 35 mL/h/kg, respectively. TP levels were about 40% reduced post- vs. prefilter. Within 8 hours of AD, the TP serum concentration decreased by about 75%. The decline in serum levels is similar to that observed during continuous veno-venous hemofiltration.

Conclusions

Despite a considerable elimination of TP by AD therapeutic serum levels could be maintained during the entire treatment by administered high doses — exceeding the recommended doses — and close drug monitoring.

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