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Vancomycin intoxications in preterm infants

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Tissing et al. [7] reported a case of reversible acute renal failure in a preterm infant under vancomycin treatment. They used however a dosage regimen which is no longer appropriate for preterm infants [6]. Several recently published controlled clinical studies demonstrated that a vancomycin dosage as low as 12 mg/kg per day does achieve therapeutic peak levels and trough levels above the minimal inhibitory concentration [1–3].

In our own studies, 10 mg/kg per day used to prevent coagulase-negative staphylococcal septicaemia still led to vancomycin peak levels above 10 µg/l (bactericidal concentrations) and trough levels above the minimal inhibitory concentration in 95% of 120 very low birth weight infants [4, 5]. The average creatinine levels were 62 µmol/l (± 17 SD) on day 3 of treatment. Urine output and blood pressure did not change significantly. Creatinine levels on day 6 and after vancomycin treatment were not significantly different from levels on day 3. We believe a much lower dosage of vancomycin than that reported by Tissing et al. is adequate to prevent and treat coagulase-negative staphylococcal septicaemia. Vancomycin doses should be adjusted to post-conceptional age, birth-weight and pre-treatment creatinine levels [5]. With that approach toxic symptoms are extremely unlikely.

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Reply

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Sir: Dr. Möller et al. comment that our regimen of vancomycin treatment (a daily dose of 30 mg/kg divided into two doses) [4] is not appropriate for preterm infants anymore. They furthermore suggest that several recently published clinical studies demonstrated that appropriate peak and trough levels of vancomycin are reached after a vancomycin dosage as low as 12 mg/kg per day [1, 3]. We disagree with the comments of Möller et al. Koren et al. [2, 3] recommend a daily regimen of 36 mg/kg divided into two doses in patients with a postconceptional age between 31 and 36 weeks and a body weight between 1200 and 2000 g. We would like to emphasise that our patient had a birth weight above 1500 g, a postconceptional age of 33 weeks and a serum creatinine of 41 µmol/l (0.46 mg/dl). Kildoo et al. [2] recommended that for patients over 2 weeks of age and with a postconceptional age over 30 weeks, the serum creatinine should be used to determine the appropriate initial dosing regimen. A daily dose of 30 mg/kg is recommended for patients with a serum creatinine < 53 µmol/l (0.6 mg/dl). Therefore, after using the serum creatinine and postconceptional age as our guide we therefore treated our patient accordingly.

We would like to stress that despite proper dosing based on postconceptional age and glomerular filtration rate, serum level monitoring is obligatory because of the wide interindividual variability and rapid changes in renal function.

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