

TEICOPLANIN (Commentary)

Optimising treatment in babies over a month old

There have several small, but relatively good, studies showing how to optimise neonatal treatment, but few published studies looking at treatment in later infancy. Since teicoplanin is almost all excreted unchanged in the urine, and since renal function changes relatively fast in the first few months of life, the dosage regime used to treat a baby 1–2 weeks old cannot be relied upon to produce a sustained therapeutic blood level later in the first year of life. Studies in older patients have shown that treatment with teicoplanin can be very successful, but only if serum levels are monitored (Darley and MacGowan, 2004), and the trough level is kept above 10 mg/l (Harding *et al.* 2000) or, for bacterial endocarditis, 20 mg/l (Cepeda *et al.*, 2004).

The treatment strategy recommended in most texts (and quoted by the current edition of *BNF for children*) is to give three 10 mg/kg loading doses IV twelve hours apart and then give a maintenance dose of 6 mg/kg IV (or IM) once a day (with a caveat that a 10 mg/kg rather than a 6 mg/kg dose may be more appropriate if there is severe infection). However a study published by Dufort *et al.* in 1996 showed that the trough blood level frequently fell below 10 mg/l when children over a year old were given even a 10 mg/kg daily maintenance dose, and Lukas reported similar findings in 2004. Both concluded that a 15 mg/kg daily maintenance dose might be the best way of reliably maintaining a trough level of more than 10 mg/l in 1–6 year old children. Clearance is quite variable, but certainly more rapid in children this age than in adult life.

Because there is, at present, almost **no** published information on how teicoplanin is handled by babies more than a month old, but less than a year old, there is a clear obligation to monitor the trough level to make sure that this still remains above 10 mg/l after the initial 'loading doses' have been given. Indeed, a recent UK working party concluded that there were strong grounds for always using vancomycin rather than teicoplanin when treating methicillin-resistant *Staphylococcus aureus* bacteraemia "unless teicoplanin levels are measured or high dosages are used empirically" (Gemmell, *et al.*, 2006). There is also a very real concern that sub-optimal treatment could speed the emergence of strains of *Staphylococcus aureus* that are resistant to teicoplanin (Cepeda, *et al.*, 2003). There is, on the other hand, good evidence that brief prophylactic use during any high-risk surgical procedure can be both safe and effective (Shime *et al.*, 2007).

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