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Panipenem/Betamipron

A Viewpoint by Takao Ozaki

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Panipenem, a parenteral carbapenem antibacterial agent, was the second carbapenem to be approved in the world. It is stable to most β-lactamases and has a broad antibacterial spectrum against Gram-positive and Gram-negative bacteria, including clinically important aerobic and anaerobic pathogens. Panipenem is coadministered with betamipron to reduce its nephrotoxicity. The drug is well tolerated in patients, including the elderly and children, with few adverse events such as diarrhoea occurring during therapy.

Against Gram-positive pathogens the antibacterial activity of panipenem is comparable to that of imipenem and greater than that of meropenem. On the other hand, the activity of panipenem is comparable to that of imipenem and less than that of meropenem against Gram-negative pathogens.

Because panipenem shows the most potent *in vitro* and *in vivo* activities against penicillin-resistant *Streptococcus pneumoniae* (PRSP) compared with other carbapenems, including imipenem, and has lower neurotoxicity than imipenem in experimental animals, panipenem/betamipron is recommended as a first choice for empirical therapy of PRSP infections.

Panipenem is also active against *Pseudomonas aeruginosa*, but its activity is generally about 2-8-fold less than that of imipenem and meropenem. The antipseudomonal activity of panipenem is enhanced much more than that of other carbapenems in biological fluids such as human serum. However, because the prevalence of drug-resistant *P. aeruginosa* infection has been increasing gradually in hospitals, we should pay careful attention to using appropriate dosages of panipenem/betamipron in the treatment of *P. aeruginosa* infections. ▲