

Population Pharmacokinetics of Amikacin in Korean Neonates

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The population pharmacokinetics of amikacin was studied in 55 newborn patients with postconceptional age (PCA) ranging between 30.1 and 44.3 weeks undergoing routine therapeutic drug monitoring of their serum amikacin levels. Population pharmacokinetic parameters were estimated from fitting the data to a single-compartment model using computer programme NONMEM. Body weight was a good predictive variable of all of the parameters, clearance and volume of distribution, and the best fitting was resulted when subjects were separated to three groups according to the PCA and 5 minutes Apgar score in the estimation of clearance. Clearance estimated was $0.104 \text{ L/h}^{-1}/\text{kg}^{-1}$ and was reduced in neonate with $33 \leq \text{PCA} < 37$ weeks ($\times 0.76$) and $\text{PCA} < 33$ weeks ($\times 0.54$), respectively. Clearance was also reduced in neonate with 5 minutes Apgar score < 7 ($\times 0.71$). Volume of distribution was 0.64 L/kg^{-1} .

These population mean parameter estimates were used to generate dosage regimen to achieve concentration with therapeutic range.