P6 EFFICACY AND SAFETY OF GENTAMICIN ADJUSTED DOSE BASE ON GESTATIONAL AGE IN THAI NEONATAL PATIENTS

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Background/Objective: There is no uniformity in the current recommendations of gentamicin dosing regimen in neonates. The regimen from Neofax 2002 guideline suggests a higher dose but extended dosing interval base on gestational age. This study aimed to determine the efficacy, safety of a new dosage regimen of gentamicin adjusted dose based on Neofax guideline.

Patients and methods: Neonates with normal renal function and diagnosed of suspected bacterial infection were enrolled. Gentamicin were administered; 5 mg/kg every 48 hr, 4.5 mg/kg every 48 hr, 4 mg/kg every 36 hr and 4 mg/kg every 24 hr for neonates with GA $\leq$ 29 weeks, 30-33 weeks, 34-37 weeks and $\geq$ 38 weeks, respectively (slow IV infusion via syringe pump over 30 minutes). The peak and trough levels were used to evaluate the efficacy and the safety. The peak were drawn within 30 minutes after the end of IV infusion of the 1st, 3rd and 6th dose, while the trough were drawn 30 minutes before the 3rd and 6th dose.

Results: Initial peak levels of 47 of 48 patients achieved therapeutic range of 4-12 ug/ml while 1 patient (GA $\leq$ 29 weeks) had slightly higher peak of 12.21 ug/ml. Similarly, the maintenance peak levels of 38/40 neonates who received the 3rd dose, were within the satisfactory therapeutic range, however, 2 patients with GA of $\leq$ 29 weeks and 30-33 weeks had slightly higher peak of 13.00 and 12.20 ug/ml, respectively. Maintenance peak levels after the 6th dose obtained from 15 neonates with GA of 34-37 weeks and $\geq$ 38 weeks were within the therapeutic range. Trough levels before the 3rd and 6th doses were within safety range of < 2ug/ml. Serum creatinine values of neonates with GA of $\leq$ 29 weeks and 30-33 weeks were higher than normal range and were declined after the first 5 days of therapy. Creatinine values of neonates with GA of 34-37 weeks and $\geq$ 38 weeks were higher than the normal range and were declined to the normal range within 3 days. Increase in GA resulted in an increase in gentamicin clearance, corresponded to a decrease in its half-life. Apparent volume of distribution (Vd) of neonates with GA of $\leq$ 29 weeks were not significant difference from neonates with GA of 30-33 weeks and 34-37 weeks. Neonates with GA of $\geq$ 38 weeks had significantly higher Vd than other groups. Gestational age, birth weight and body surface area had positive correlations with the elimination rate constant, clearance and Vd but a negative correlation with half-life. Since the peak and trough levels of neonates receiving the dose of gentamicin in this study were within the therapeutic and safety range, we concluded that the dosage regimen of Neofax guideline was appropriated for Thai neonates.

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