PHA 5128

Homework II

1. Estimate the half-life of gentamicin in two male patients with normal renal function (CL=0.12 L/min) if their weight is 55 kg vs. 90 kg. Assume a height of 6’.

2. How long after the end of an intravenous infusion do you draw a peak serum concentration of gentamicin? Discuss the reason for not drawing the peak concentration immediately following the end of the infusion.

3. Based on the Cockcroft-Gault-Equation, calculate the amount of creatinine that is produced every hour from muscle in a normal 20 year old and 90 year old male subject (body weight 70 kg) with a serum creatinine of 0.9 mg/dl.

4. A 3 month old infant, born at full-term gestational age, is admitted to Shands Hospital for possible pneumonia. The infant weighs 3.5 kg. Ampicillin 175 mg iv q6h and Gentamicin 5 mg iv q8h (30 min infusion) is started. On day 3 of therapy, gentamicin serum concentrations are drawn as listed below:
   Gentamicin dosing schedule 06-14-22 h.
   Gentamicin peak serum conc. 6.6 µg/ml drawn at 0700 on 4/23.
   Gentamicin trough serum conc. 1.1 µg/ml drawn at 1330 on 4/23.
   a. Determine the estimated $k_e$ and $t_{1/2}$ of gentamicin in this patient.
   b. Calculate the dose and dosage schedule necessary to achieve a peak serum gentamicin concentration of at least 10 µg/ml.