

eP010

ePoster Viewing

PK/PD to improve treatment of critically ill patients

AMIKACIN PEAK LOADING IN OBESE PATIENTS: APPLICATION OF ADJUSTED BODY WEIGHT FORMULA WITH MODERN POSOLOGIES. ARE 30 MG/KG ENOUGH?

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Objectives: Obesity is increasing all around the world. It is a risk factor for under- and overdosing of antibiotics, that can lead to loss of efficacy, resistance of pathogens, or toxicity. Amikacin (AMK) is a frequently used aminoglycoside in case of severe Gram-negative bacilli infections, because of sustained sensitivity of most strains of *Enterobacteriaceae* and *Pseudomonas aeruginosa*. Its efficacy depends mainly on peak concentration (C_{peak}), that should superate 8 times the MIC for the first doses during the first 48 hours. Posologies have been upgraded in the last years to reach this target, but few data about amikacin peak loading in obese patients are reported so far. It is recommended that the dosing in obese patients should be calculated following the Adjusted Body Weight formula: $ABW = IBW + 0,4 \times (TBW - IBW)$. IBW = Ideal Body Weight, TBW = Total (observed) Body Weight. Some authors suggest a 30mg/kg dose of Total Body Weight in critically ill patients but no study has focused on obese patients.

The aim of the study was to evaluate amikacin peak loading in obese patients, and to determine if the ABW formula with current guidelines posologies (25-30mg/kg of observed body weight) can provide sufficient peak concentrations (>64mg/l).

Methods: An Excel[®] calculator was developed to determine posologies following the ABW formula, and to evaluate the corresponding dose of injected AMK in mg/kg of TBW. A prospective multicentric study was conducted with following inclusion criteria: Body Mass Index >30 kg/m², treatment by AMK. C_{peak} was measured 30 minutes after the end of a 30 minutes controlled infusion. correlation (Spearman test) was searched between C_{peak} and dose in mg/kg of TBW, BMI, SOFA and APACHE 2 scores. A chi² test was performed to compare patients treated with dose <30mg/kg to those with dose >30mg/kg on the C_{peak}>64mg/l criteria. Statistical analysis was performed with SPSS[™] software.

Results: 38 patients were included. Mean age was 63,2 years (min 23; max 82); mean BMI was 37,6kg/m². Mean AMK posology was 30,2 mg/kg (min 19,4; max 35,6) using the ABW formula. Mean C_{peak} was 66mg/l, and 50% patients have reached a C_{peak} >64mg/l. Mean SOFA and APACHE 2 scores were respectively 7,25 (min 1 max 16) and 22,3 (min 5 max 38). A correlation was found between ABW dose in mg/kg and C_{peak} (p=0,002), but none between C_{peak} and BMI, SOFA and APACHE 2 scores. Patients treated with an ABW dose >30mg/kg were statistically different from those treated with an ABW dose<30mg/kg to achieve a C_{peak} >64mg/l (p=0,007).

Conclusions: Amikacin posologies keep evolving. To obtain a C_{peak} supering an 8 MIC ratio (64mg/l for *Pseudomonas aeruginosa* and *Enterobacteriaceae*) in obese patients, a dose >30mg/kg using the ABW formula could be necessary.