Vancomycin dose adjustment done in a real time for target attainment in critically ill septic paediatric burn versus non-burn patients against Staphylococcus spp MIC 1 mg/L

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Ronaldo Morales Junior[1]; Thais Vieira de Camargo[1]; Vedilaine Aparecida Macedo[1]; Edvaldo Vieira Campos[2]; João Manoel da Silva Junior[2]; Cristina Carvalho da Silva[2]; Frederico Ribeiro Pires[3]; Artur Figueiredo Delgado[3]; Nilo José Coelho Duarte[4]; Silvia Regina Cavani Jorge Santos[1], David de Souza Gomez[2]

[1]Clinical Pharmacokinetics Center, School of Pharmaceutical Sciences; [2]Division of Plastic Surgery and Burns,[3]Pediatrics Institute, [4]Division of Central Laboratory HC FM. Sao Paulo University (Sao Paulo, SP. Brazil)

Introduction

Vancomycin initial dose regimen is recommended for critically ill paediatric patients with bloodstream infection caused by gram-positive strains. Drug effectiveness must be guaranteed by the area under the curve/minimum inhibitory concentration ratio: AUC^{SS}_{0-24}/MIC>400 in ICU patients.

Objectives

To evaluate if dose adjustment at the earlier period of septic shock must be done for target attainment against gram-positive strains MIC 1 mg/L based on pharmacokinetics-pharmacodynamics (PK/PD) approach by comparison of burns with non-burns paediatric patients.

Methods

Patients were investigated after the recommended empiric daily dose (set 1) and after drug therapy individualized (set 2). The dose was adjusted if required based on PK/PD target: AUCss0-24/MIC>400. Pharmacokinetics was investigated based on the one compartment open model, and the parameters estimated were biological half life, total body clearance and volume of distribution.

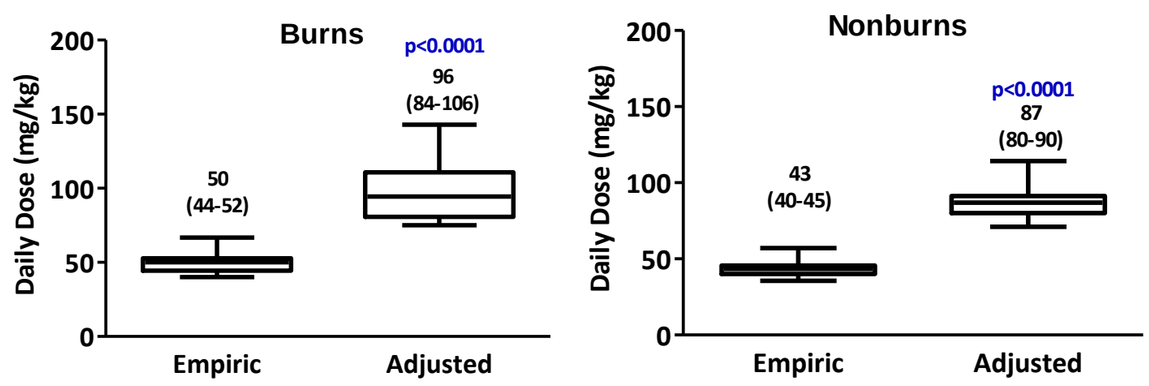
34 septic pediatric burn and non-burn patients (12F/22M)

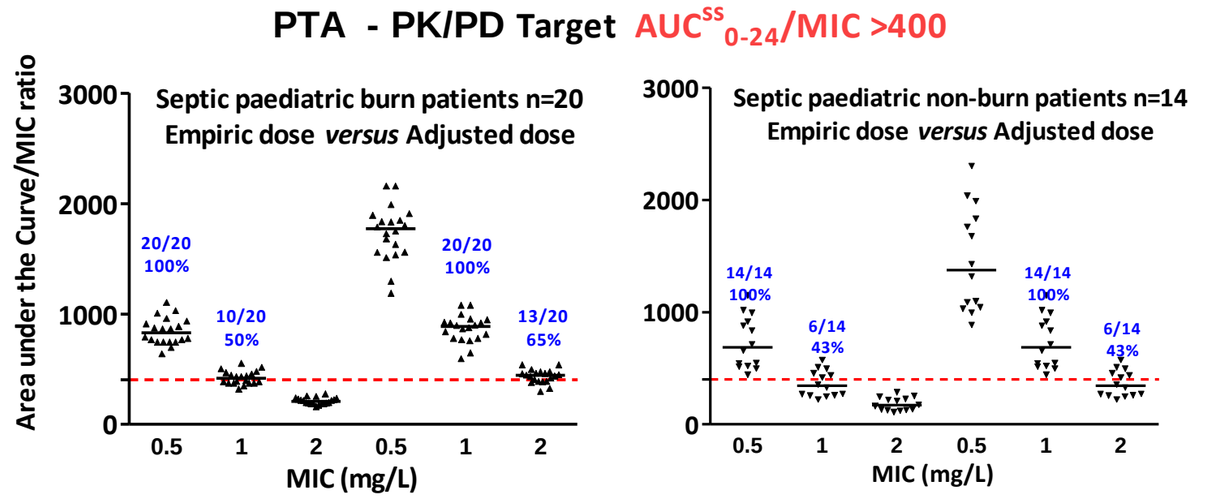
- Age: 5 – 10 years years
- Ideal body weight: 16 - 22 kg
- Creatine Clearance >240 mL/min

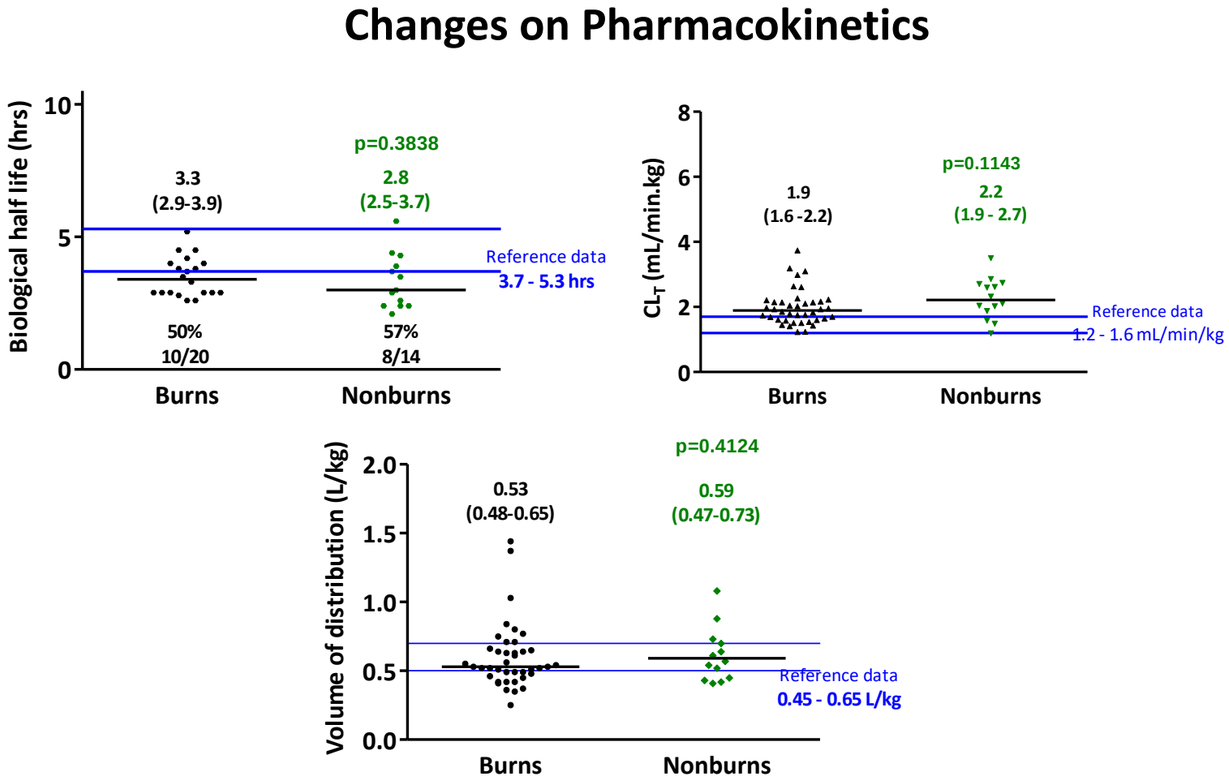
- Therapy started with 10-15 mg/kg q6h
- One hour infusion
- Blood was sampling (1.5 mL/each) at the 3rd and 5th hr of the starting of infusion
- Serum levels were obtained by liquid chromatography and immunoassay

Results

It was demonstrated significant differences between the recommended dose regimen and individualized therapy, in both groups of patients investigated







[3] Boeckh et al. Antimicrob Agents & Chemother. 1988, 32 (1):92-95

Conclusions

Since pharmacokinetics was altered at the earlier period of septic shock in ICU paediatric patients, the dose must be adjusted soon to eradicate gram-positive MIC 1-2 mg/L susceptible strains.

The PK/PD approach for Vancomycin done in a real time permits an earlier clinical intervention to reach the desired clinical outcome with cure of infection.

We declare that there is no conflict of interest

Corresponding author: Ronaldo Morales Junior
morales.ronaldo@gmail.com