Evaluasi ketercapaian kadar optimal amikasin pada pasien sepsis di Intensive Care Unit (ICU) RSUPN dr. Cipto Mangunkusumo = Evaluation of optimal amikacin levels in critically ill patients with sepsis in Cipto Mangunkusumo Hospital

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Abstrak

ABSTRAK
 Latar belakang

Kematian akibat sepsis dan syok septik pada pasien rawatan Intensive Care Unit (ICU) yaitu 20-30%. Pemberian antibiotik empirik yang tepat merupakan salah satu langkah awal yang sangat penting. Amikasin merupakan salah satu antibiotik terpilih untuk tata laksana sepsis di ICU RSUPN dr. Cipto Mangunkusumo (RSCM). Saat ini belum pernah dilakukan penelitian mengenai ketercapaian kadar terapi amikasin dengan menggunakan dosis standar amikasin pada pasien sepsis dewasa di ICU RSCM, sehingga studi ini menjadi penelitian pertama di Indonesia.

Penelitian ini bertujuan untuk mengetahui ketercapaian kadar amikasin optimal pada pasien ICU RSCM.

Metode

Data dikumpulkan secara potong lintang melalui observasi terhadap hasil pemeriksaan kadar plasma amikasin, pengukuran minimum inhibitory concentration (MIC) dan perhitungan rasio Cmax/MIC pada pasien sepsis di ICU RSCM periode Mei-September tahun 2015.

Hasil penelitian

Proporsi pasien sepsis dengan kadar amikasin optimal ialah sebesar 57% (4/7). Kadar puncak amikasin yang dapat dicapai dengan dosis 1000 mg sekali sehari tanpa menghiraukan berat badan ialah median 86,4 (43,5-238) µg/mL. Pada penelitian ini ditemukan 87% pasien dengan kadar puncak amikasin di atas 64 µg/mL, meskipun amikasin 1000 mg tersebut lebih rendah dari dosis yang dianjurkan untuk sepsis (25 mg/kgBB). Sebagian besar (78,3 %) subyek pada kenyataannya menerima dosis 15-25 mg/kgBB, dengan pemberian 1000 mg amikasin tanpa memperhatikan berat badan. Bakteri yang banyak ditemukan dari hasil kultur pasien sepsis di ICU RSCM, yaitu K. pneumoniae, A. baumanii, P. aeruginosa dan E. coli. Rentang nilai MIC untuk patogen tersebut berturut-turut yaitu 0,75 - >256 µg/mL, 0,75 - >256 µg/mL, 1,5 - >256 µg/mL dan 0,75 - 16) µg/mL. Sebanyak 84% isolat K. pneumoniae masih sensitif terhadap amikasin, diikuti oleh 63% untuk A. baumanii, 47% P. aeruginosa dan 100% untuk E. coli.

Kesimpulan

Optimalitas amikasin terhadap bakteri Gram negatif penyebab sepsis bergantung kadar puncak dan MIC

bakteri. Kadar puncak plasma amikasin yang dicapai dengan dosis 1000 mg sekali sehari sangat bervariasi. Pemberian amikasin dengan dosis per kgBB dapat dipertimbangkan. Kepekaan beberapa bakteri Gram negatif terhadap amikasin mulai menurun dengan rentang MIC yang cukup lebar. Pengukuran ketercapaian kadar optimal dalam terapi definitif dapat dilakukan untuk meningkatkan keberhasilan terapi.ABSTRACT
 Background

The mortality caused by sepsis and septic shock in the Intensive Care Unit (ICU) is 20-50%. The important first step to reduce this conditions is to give the right empirical antibiotics. Amikacin is one of the antibiotics of choice for the sepsis and septic shock in ICU of Cipto Mangunkusumo (CM) Hospital. Studies on the amikacin plasma level in adult patients being given amikacin in ICU RSCM has never been done.

The objective of this study is to explore the plasma level of amikacin in septic patients in CM Hospital.

Methods

This was a cross sectional study. Data on plasma amikacin level, microbiological culture, measurement of minimum inhibitory concentration (MIC), and amikacin optimal level in septic patients admitted to ICU of RSCM during May-September 2015.

Results

The proportion of septic patients that achieve amikacin optimal level was 57% (4/7). Peak amikacin level that can be reached with 1 gram per day dose was 86,4 (43,5-238) g/mL. Although amikacin was given less than recommended dose for sepsis (25 mg/body weight), 87% patients was found to have peak amikacin level > 64 µg/mL. Most (78.3%) of the patients received amikacin with dose range 15-25 mg/kgBW, in which patients was given 1000 mg of amikacin regardless of the body weight. The organisms commonly identified from the microbiological culture septic in patients in ICU of RSCM were K. pneumoniae, A. baumanii, P. aeruginosa, and E. coli. The MIC for these pathogen were 0.75 - >256 µg/mL, 0.75 - >256 µg/mL, 1.5 - >256 µg/mL and 0.75 ? 16 µg/mL, respectively. Most (84%) of K. pneumoniae isolates was still sensitive to amikacin, while 63% A. baumanii isolate, 47% of P. aeruginosa, and 100% of E. coli were sensitive to amikacin.

Conclusions

Amikacin?s efficacy to eradicate Gram negative microorganism causing sepsis depend on peak level and MIC of the microorganism. By giving 1000 mg dose per day of amikacin, highly variable peak plasma concentration of the drug was observed. Therefore, amikacin dosing based on weight might be useful to reduce the wide variation. In this study, we found that sensitivity of some Gram negative pathogen are decreasing, with wide range of MIC. Evaluation of optimal level for definitive therapy might be useful to reach more successful treatment.;Background

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