

The use of ceftriaxone impregnated beads in the management of chronic osteomyelitis

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Abstrak

Saat ini penanganan osteomielitis kronis masih merupakan masalah dalam bidang orthopaedi. Debridemen dan pemberian antibiotika merupakan penatalaksanaan yang dianut. Seringkali antibiotika yang diberikan secara oral maupun parenteral tidak dapat mencapai lokasi infeksi dengan baik. Para ahli mengembangkan pemberian antibiotika lokal dalam bentuk antibiotic beads. Antibiotic beads yang terdapat dipasaran saat ini sangat mahal, sehingga kami mencoba membuat antibiotic beads sendiri dengan menggunakan bahan aktif ceftriakson. Ceftriaxone impregnated beads dibuat dengan mencampur 2 gram bubuk ceftriakson dan 40 gram polimetilmetakrilat secara steril. Ukuran beads 3x5 mm. Digunakan 30 ekor kelinci jantan yang masing-masing dilakukan induksi osteomielitis pada tulang radius kirinya dengan menggunakan kuman *Staphylococcus aureus*. Pada minggu ke-4 dilakukan pemeriksaan klinis, radiologis, biakan kuman dan histopatologis untuk membuktikan adanya osteomielitis. Selanjutnya dibagi menjadi tiga kelompok dengan jumlah setiap kelompoknya sepuluh kelinci. Kelompok pertama hanya dilakukan debridemen. Kelompok kedua debridemen diikuti pemberian ceftriakson intravena. Kelompok ke-3 debridemen diikuti pemberian ceftriakson intravena dan ceftriaxone impregnated beads. Setelah empat minggu kembali dievaluasi secara klinis, radiologis, biakan kuman dan histopatologis. Pada kelompok pertama, kejadian osteomielitis pada akhir empat minggu terapi adalah 60% (angka keberhasilan 40%). Pada kelompok kedua, angka kejadian osteomielitis setelah pengobatan adalah 20% (angka keberhasilan 80%). Sedangkan kejadian osteomielitis setelah empat minggu pengobatan pada kelompok ketiga adalah 0% (angka keberhasilan 100%).

Kesimpulan: kombinasi antibiotik sistemik dengan ceftriaxone impregnated beads lebih efektif dari antibiotik sistemik. (Med J Indones 2005; 14: 157-62).

Up to now, orthopaedic management of chronic osteomyelitis is still problematic. Debridement and antibiotic administration is still a widely practiced management. However, oral or parenteral antibiotics often cannot reach the infection site well. Some experts have developed a system to administer local antibiotic in the form of antibiotic beads. Antibiotic beads on the market are still very expensive. Therefore, we made efforts to make our own antibiotic beads by using Ceftriaxone as the antibiotic. Ceftriaxone impregnated beads were made by mixing 2 grams of Ceftriaxone powder with 40 grams of polymethyl methacrylate (PMMA) bone cement sterilely. The size of the beads was 3 x 5 mm. Thirty male rabbits that were induced to get osteomyelitis by inoculating *Staphylococcus aureus* to their left radius bones were used. In the fourth week, clinical, radiological, histological examination and bacterial culture were performed to prove the presence of osteomyelitis. Then, the samples were divided into 3 groups of ten. The first group only underwent debridement. The second group underwent debridement followed by intravenous Ceftriaxone administration. The third group underwent debridement followed by intravenous Ceftriaxone and Ceftriaxone-impregnated beads administration. After four weeks, clinical, radiological, histological examination and bacterial culture were repeated. In the first group, the incidence rate of osteomyelitis at the end of the fourth week of therapy was 60% (success rate 40%). In the second group, after four weeks of

therapy the incidence rate of osteomyelitis after treatment was 20% (success rate 80%), whereas that of the third group was 0% (success rate 100%). In conclusion, the efficacy of combination of systemic antibiotic therapy and ceftriaxone impregnated beads in the therapy of chronic osteomyelitis is better than systemic antibiotic therapy. (Med J Indones 2005; 14: 157-62).