Comparison of Two Cephalosporins in the Surgical Treatment of Peritrochanteric Fractures: Reply

Th.	Karachalios
-----	-------------

Department of Orthopaedic Surgery, Bristol Royal Infirmary, University of Bristol, UK

Th. Karachalios, MD, Department of Orthopaedic Surgery, Bristol Royal Infirmary, University of Bristol, Bristol BS2 8HW (UK)

I would like to reply to the 'Letter to the Editor' submitted by Dr. R.N. Jones concerning my publication in the journal *Chemotherapy* which was entitled 'Antibiotic Prophylaxis in the Surgical Treatment of Peritrochanteric Fractures: A Comparative Trial between Two Cephalosporins' [1].

Whilst I agree with Dr. Jones' comments regarding the cost-effectiveness and antimicrobial action of antibiotics and the problem of the high protein binding of ceftriaxone, there are some points I would like to raise concerning his comments on the 'proven' effectiveness of a single dose of cefotaxime in the prevention of infection in orthopaedic surgery. Firstly I shall comment on the literature cited by the author of this letter, and secondly I shall make reference to very recent evidence which indicates that the issue of antibiotic prophylaxis in hip surgery is still controversial.

Infection in orthopaedic surgery contrasts with that of general surgery, gynaecology and other specialties because of the poor pharmacokinetics of the antibiotics in the myoskeletal system, the presence of prosthetic materials and the insertion of drainage tubes for 24-48 h. For this reason, studies such as those cited by Dr. Jones [2-5] which present results from non-homogeneous groups of patients are difficult to evaluate in terms of their relevance to orthopaedics.

Moreover, late infection, sometimes up to 2 years following an operation, is a common serious problem in orthopaedics, especially in the presence of prosthetic materials. Studies with a short follow-up of 30 days such as that cited by the author of the letter [4] are therefore only partially relevant to the problems of infection in orthopaedics.

In contrast to Dr. Jones' statement regarding the 'proven single-dose potential' of cefotaxime for the prevention of infection in orthopaedic surgery, a recent review article [6] presents a rather different view: '... so far as duration of antibiotic prophylaxis is concerned, 3-dose regimens have become fairly commonplace.'

Further evidence that this issue remains controversial is shown in two recent publications which used cephalosporins of similar half-life to cefotaxime. In the first [7], a prospective randomised double-blind trial of 1 dose of cefuroxime versus placebo, no significant difference was found in the prevention of superficial or deep wound infection. A further study of 3 doses of cefuroxime versus placebo was proposed by the authors.

In the second study [8] no difference was found in infection rates between a randomly allocated control group and a group given a single 2-gram dose of methicillin.

Finally, in a multiple-centre Italian study

©1992

S. Karger AG, Basel

0009-3157/92/

0383-0199 \$2.75/0

[9] of 833 patients undergoing orthopaedic surgery, in which patients were randomly assigned to either cefamandole of 24 h administration or a single dose of ceftriaxone, the single-dose regimen was as effective as the multiple-dose regimen in preventing wound infection.

In my opinion, based on the evidence presented so far in the literature, prevention of infection in hip surgery should include administration of antibiotics that covers the 24-h postoperative period. So far, it looks as though either 3 doses of an antibiotic with a short half-life, or alternatively 1 dose of that of a long half-life, is the most effective way to do so.

References

Karachalios T, Lyritis GP, Hatzopoulos E: Antibiotic prophylaxis in the surgical treatment of peritrochanteric fractures: A comparative trial between two cephalosporins. *Chemotherapy* 1990;36:448-153. Jones RN, Wojeski W, Bakke J, Porter C, Searles M: Antibiotic prophylaxis of 1,036 patients undergoing elective surgical procedures: A prospective, randomized comparative. *Am J Surg* 1987;153:341-346. Jones RN, Wojeski WV: Single-dose cephalosporin prophylaxis of 929 surgical procedures in a prepaid group practice: A prospective, randomized comparison of cefoperazone and cefotaxime. *Diagn Microbiol Infect Dis* 1987;6:323-334.

Jones RN, Slepach JM, Wojeski WV: Cefotaxime single-dose surgical prophylaxis in a prepaid group practice: Comparisons with other cephalosporins and ticarcillin/clavulanic acid. *Drugs* 1988;35(suppl 2): 116-123.

Jones RN: Review of cefotaxime sodium for surgical prophylaxis: A model for the evolution toward single-dose or short-course cost-effective regimens. *Diagn Microbiol Infect Dis* 1990;13:317-327. Williams DN, Tsukayama DT: Antibiotics: Theory, principles, prophylaxis and treatment. *Curr Opin Orthop* 1991;2:46-53.

McQueen MM, Littlejohn MA, Miles RS, Hughes SP: Antibiotic prophylaxis in proximal femoral fractures. *Injury* 1990;21:104-106. Hjortrup A, Sorensen C, Mejdahl S, Horsnaes M, Kjersgaard P: Antibiotic prophylaxis in surgery for hip fractures. *Acta Orthop Scand* 1990; 61:152-153.

Periti P, Jacchia E: Ceftriaxone as short-term antimicrobial chemoprophylaxis in orthopaedic surgery: A 1 year multicentric follow-up. *Eur Surg Res* 1989;21(suppl):25-32.

200

Karachalios

Comparison of Two Cephalosporins in the Surgical Treatment of Peritrochanteric Fractures:
Reply