Correspondence

Antiviral activity of local anaesthetic agents

J Antimicrob Chemother 1996; 35: 635

Sir,

We would like to add a brief comment on the topic of antimicrobial activity of local anaesthetics after the publication of an excellent review (Cederlund & Mårdh, 1993) and the subsequent letter to the Editor (de Clari 1994). Only antibacterial activity of local anaesthetics is mentioned by these authors, while we have tested in vitro the antiviral action of these drugs against Herpes simplex I (HSV-1) with interesting results. We have performed the "plaque neutralization test" against HSV-1 in Vero cells. We tested, for each drug, solutions at different concentrations: 0.25% and 0.5% bupivacaine with and without adrenaline, hypertonic 1% bupivacaine, 2% mepivacaine, 1% mepivacaine with adrenaline, 1% and 2% lignocaine and 5% hypertonic lignocaine. Our results showed that intermediate-potency anaesthetics like mepivacaine can inhibit viral replication by up to 50% but only with concentrated solutions (more than 1%) and with adrenaline. With more powerful anaesthetics such as bupivacaine the inhibiting activity is present even with 0.5% solutions but, again, without adrenaline, the effect is greatly reduced, and the maximal inhibitory effect is achieved with 1% solutions. It has been postulated that antibacterial activity of local anaesthetics (Fazly Bazar & Salt, 1983) can be exerted on cell viability through a loss of vital constituents or through the inhibition of bacterial growth, but it is not clear how local anaesthetics exert antiviral activity. Since contact between the drug and the virus occurred before the inoculation into the Vero cells, it is likely that the inhibitory effect is primarily directed against the virus itself and not, like most antiviral drugs, mediated by an interference with the mechanisms of cellular replication involving viral and host cell nucleic acids.

From our results it seems that local anaesthetics can exert an antiviral activity in vitro at certain concentrations; this effect increases proportionately with the concentration of the solution and is influenced by other factors like the osmolarity and the presence of adrenaline (possibly a pH effect), especially when a less concentrated solution is employed.

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References


Over-the-counter availability of antibiotics

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Sir,

Pringle (1995) approaches the argument for and against further over-the-counter (OTC) availability of antibiotics from the wrong direction. He implies that General Practitioners' current practice of largely empirical treatment for infections is acceptable when we know that, particularly for respiratory infection, this leads to unnecessary antibiotic exposure in many millions of patients per annum in the UK alone (Gonzales & Sande, 1995). Rather than accepting this and saying that pharmacists will do no worse, surely a more constructive approach is to direct more effort to improving the diagnosis of infection in General Practice. The increased costs will be more than compensated for by improved use of antibiotics.

We have just completed a pilot study of 60 patients in six General Practices in the...
Anaerobic Gram-negative bacilli, in particular Sir, Bacteroides spp., are important and Prevotella/Macramase production of clinical isolates of Bacteroides and Prevotella species over a 9 year period. In order to be aware of any changes in the effectiveness of these agents, we have carried out a survey to monitor β-lactam antibiotic susceptibility and β-lactamase production of anaerobic Gram-negative bacilli isolated from clinical specimens in Nottingham. These findings were compared with two similar studies which were carried out in Nottingham within a nine year period (Eley & Greenwood, 1986; Edwards & Greenwood, 1992).

Finally, high patient expectation for antibiotic treatment, often cited as a reason for over prescribing of antibiotics by GPs short of time, was not borne out by our study. Only 5% of eligible patients refused recruitment because they wanted an antibiotic and were not happy to wait 24 h for the culture results. Several spontaneously commented on the problem of antibiotic overuse and resistance is getting through to patients if not to doctors!

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References

Changes in β-lactam antibiotic susceptibility and β-lactamase production of clinical isolates of Bacteroides and Prevotella species over a 9 year period


Sir,
Anaerobic Gram-negative bacilli, in particular Bacteroides and Prevotella spp., are important pathogens often found in association with facultative aerobic bacteria (Summanen et al., 1993). β-Lactam antibiotics, used in combination with a β-lactamase inhibitor or which are intrinsically susceptible to common β-lactamases, are useful therapeutic agents to combat these infections (Rasmussen, Bush & Tally, 1993). In order to be aware of any changes in the effectiveness of these agents, we have carried out a survey to monitor β-lactam antibiotic susceptibility and β-lactamase production of anaerobic Gram-negative bacilli isolated from clinical specimens in Nottingham. These findings were compared with two similar studies which were carried out in Nottingham within a nine year period (Eley & Greenwood, 1986; Edwards & Greenwood, 1992).

Bacteroides fragilis remained the most frequently isolated species comprising 60% of all isolates, while other Bacteroides spp. accounted for 17% of the strains examined. In contrast, there has been a marked increase in the numbers of Prevotella spp. isolated over the past four years, representing 21% of all isolates in this study compared to 7% in 1990. Eleven of the 19 Prevotella spp. isolates were identified as Prevotella bivia. Two other isolates were identified as Porphyromonas spp. In the 1986 study, Prevotella and Porphyromonas spp. were not examined.

β-Lactamase production was detected in the majority (87%) of the isolates by a whole cell semi-quantitative method with nitrocefin as substrate, findings consistent with the two previous Nottingham studies and others (Aldridge et al., 1988). Elevated β-lactamase production was found in 25% of strains; an increase compared to 1986 and 1992 when 17% and 21% of isolates respectively showed raised β-lactamase levels. Sixteen (70%) of the 23 isolates that produced enhanced levels of cephalosporinase also gave positive reactions in a test for penicillinase, identical findings to the previous two studies. The isolates which showed raised β-lactamase activity comprised 8 B. fragilis, 8 P. bivia, 5 Bacteroides ovatus, 1 Prevotella oralis and