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Correspondence

Antiviral activity of local anaesthetic agents

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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* 1 (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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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

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