Our sentence "Patients who received muscle relaxants were not included in this study" is misleading and is the source of confusion. The sentence referred to the design of the study in which we intended to include only those reactions which were clearly the result of an induction agent and to exclude any reactions in which a relaxant had been used at induction. This was to avoid reactions where it was not absolutely clear whether the induction agent or the relaxant had caused the problem. In the end we did not have to exclude any reactions on this basis, which is perhaps a matter for comment.

We have therefore calculated the minimum frequency of reactions for each drug. We believe this is the best way to present these figures.

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SEDATION FOR UPPER GASTROINTESTINAL ENDOSCOPY

Sir,—In my practice, which differs from that of Dr Nimmo (Douglas et al., 1980; Nimmo, 1981), the patients receive guaranteed and immediate sedation; I doubt if temazepam can provide this (Harris, 1981).

After more than 12,000 gastroscopies with 30–40 patients per session, the "turn around time" for our patients averages 5 min comprising: about 1 min for injection, 1–2 min for gastroscopy, and about 2 min to remove the patient from the table and position the next one. Some patients, particularly those bleeding briskly or when multiple biopsies are needed, take much longer to examine.

I use pre-mixed diazepam and hyoscine (Buscopan) 20 mg each. Most fit patients receive the full dose in less than 30 s without titration (which would delay the procedure); the elderly or frail receive less. In almost all patients adequate and rapid sedation ensues; the vast majority cannot recall the examination, which is a major reason why most are willing to have the procedure repeated. None has had respiratory problems.

More patients given temazepam could recall the procedure; this suggests the sedation was less than with diazepam despite a 10-min interval between the injection and endoscopy, by which time the peak sedative effect would have passed in many. In my experience inadequate sedation prolongs the examination and makes patients reluctant to re-attend.

For the few patients with recurrent thrombophlebitis from i.v. diazepam, I will certainly use oral temazepam. But in my peculiar type of endoscopy practice, there is as yet no substitute for i.v. diazepam.

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REFERENCES


P.V.C. CUFFS AND LIGNOCaine-BASE AEROSOL

Sir,—Horutz (1977) observed that an aerosol of lignocaine base can cause pin-holes in the inflated cuffs of endotracheal tubes, and suggested that lignocaine-base aerosol should not be used when it could be sprayed on p.v.c. cuffs.

We have noted that a droplet of the aerosol on a p.v.c. cuff causes: (1) no effect on its inflation; (2) occurrence of a pin-hole after a short interval; (3) the raising of a blister on the inflated cuff or, (4) sudden rupture of the cuff.

These different effects depend on the size of the droplet, whether it spreads or is localized, and the extent of stretch of the cuff membrane.

The explanation which we suggest is that the aerosol contains a swelling agent for the cuff. The different effects are explicable in terms of the rate of its diffusion and the changes it causes on the mechanical properties of the cuff membrane. Swelling agents soften a polymer and decrease its tensile strength. If it is insufficiently localized, it merely causes a marginal softening of the cuff membrane and an insignificant increase in cuff volume (effect (1) above). If the tensile strength in a small area is reduced below the tension in the membrane at that point, a micro-rupture occurs (pin-hole formation). If a larger area is softened, the pressure uniformly exerted on the inside of the membrane causes the softer region to stretch further and so form a blister. Finally, if a substantial amount of swelling agent is rapidly absorbed in a larger area, a tear occurs.

We made an aerosol with the same propellants containing 10% di-octyl-phthalate, a typical plasticizer for p.v.c. This aerosol produced all the above effects.

To confirm that Xylocaine Spray contained a swelling agent, pieces of cuff were immersed for 1 h in the pressurized liquid. After leaving in air for the propellants to evaporate, the cuff material increased in weight by between 10 and 15%.

The fluorocarbon propellants themselves did not evince any swelling action nor adversely affect an inflated cuff. Lignocaine-base is otherwise the only ingredient in significant quantity and appears to be the causative agent. This is not surprising from its dissolution in a wide range of organic materials up to the polarity of methanol—bracketing the polarity of p.v.c. As further confirmation, lignocaine-base crystals placed on an inflated cuff were absorbed into it and after 2–5 h could cause pin-holes and blisters. However, lignocaine hydrochloride (the salt) in solution or in crystal form had no effect on p.v.c. cuffs. Hence, as confirmed experimentally, gels or salves of the salt have no adverse effect on inflated p.v.c. cuffs. This correlates with the insolubility of the salt in p.v.c. and in organic materials including cyclohexane with a solubility parameter of 11.4, but in ethanol of 12.7, whereas p.v.c. has a solubility parameter of 9.5.

Astra Pharmaceuticals Ltd inform us that Xylocaine Spray is not recommended when it may contact p.v.c. cuffs. Xylocaine 4% topical and 2% gel—which contain the salt and not the base—are recommended. The above findings are in harmony with these recommendations.

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REFERENCES