Comment

Addiction to benzodiazepines has been denied in some quarters on the basis that reported case histories do not fulfil the criteria of drug dependence.² This case illustrates dramatically the four main features of dependence—namely, use of a drug to achieve its psychic effects, increase of dosage with time to achieve the same effects, experience of withdrawal symptoms on stopping the drug or reducing the dose, and abolition of withdrawal symptoms when the drug is reinstated. Short-acting benzodiazepine hypnotics may have some advantage as regards hangover³ but they share the addiction potential of all benzodiazepines.

¹ Lader M. The present status of benzodiazepines in psychiatry and medicine. *Arzneim Forsch* 1980;**30**:910.

² Marks J. *The benzodiazepines: use, overuse, misuse, abuse*. Lancaster: MTP Press, 1978.

³ Committee on the Review of Medicines. Systematic review of benzodiazepines. *Br Med J* 1980;**280**:910-2.

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Reducing risks from intravenous cannulae

Intravenous treatment is used increasingly in medical practice and accounts for the popularity of cannulae such as the Venflon, which allow continuous or intermittent intravenous access through a side port. Recently we studied the risks of such cannulae and showed local inflammation in 35% of cases, culture-positive cannula tips in 15%, and septicaemia in 1%.¹ In that study the technique of inserting the cannula was not standardised, and the skin was prepared with only a 70% isopropyl alcohol disposable swab (Medi-swab). We report here further studies on 260 cannulae to investigate practical ways of reducing such risks.

Methods and results

All Venflon cannulae studied were inserted on consecutive patients on two medical wards and an adjoining coronary care unit. The cannulae were removed when clinically indicated and were studied using the technique and methods previously described.¹ Before the cannula was removed a moistened swab was inserted into the side injection port, rotated vigorously, and cultured aerobically on blood agar.

Initially we looked at 171 consecutive cannulae inserted with a sterile "no-touch" technique after spraying the insertion area with chlorhexidine gluconate 0.5% in 70% industrial methylated spirit (Dispray No 3, Stuart Pharmaceuticals) and allowing it to dry. Cannulae were secured with ad-

hesive tape. The old Venflon model (n = 84), as previously studied,¹ was compared randomly with the current siliconised model (n = 87). Results were similar and were therefore combined. The mean duration of cannulation was 61.4 hours (range 8-330 hours). Six cannulae (3.5%) produced significant bacterial growth on roll-plate culture.² There were 20 (12%) positive skin cultures and 11 (6%) positive side port cultures (table). Local inflammation was present around 43 (25%) cannulae.

We also looked at a further 89 cannulae where the skin entry site was not occluded with the securing adhesive tape, but covered with a small sterile gauze. Forty-two (47%) of the cannula insertion sites were uncovered daily and sprayed with povidone-iodine dry powder (Stuart Pharmaceuticals). There was no difference in the complications observed and the results were therefore combined. The mean duration of cannulation was 65.5 hours (range 4-200 hours). No cannula tip was culture positive and in only one patient did skin and port cultures grow *Staphylococcus epidermidis* (see table). Local inflammation was present around 16 (18%) cannulae.

In all 260 cannulae there was no relation between cannula tip cultures or local inflammation and duration or site of cannulation, skin shaving, or use of the side port for giving medication. Medication had not been given through 73 (28%) cannulae. No cases of bacteraemia were found.

Comment

In both the cannulae secured with tape and those covered with sterile gauze the incidence of positive cultures from the cannula tip (3.5% and 0% respectively), local inflammation (25% and 18%), positive skin cultures (11.7% and 1%), and septicaemia (0%) was much lower than we previously reported.¹ This reduction is probably related to skin preparation with 0.5% chlorhexidine in spirit, careful cannula insertion, and an increased awareness of the problem. A separate gauze covering the insertion site appeared to reduce the incidence of positive cultures from the cannula tip and skin. Daily spraying with povidone-iodine did not reduce local inflammation or cannula infection.³

Although the side injection port is a useful device, it has been criticised as a possible harbour for infection.⁴ One small laboratory study found bacteria in 55% of 56 Venflon side ports.⁵ We noted a much lower incidence (4.6% of 260 side ports). On six occasions organisms shown to be similar by typing methods were found on skin culture and port culture, but on no occasion was the identical organism cultured from port and cannula tip.

Although this was not a controlled study, our findings suggest that risks from these intravenous devices may be reduced by limiting unnecessary cannulation (28% of our cannulae were not used for giving medication) and by using a careful sterile insertion and fixation technique.

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¹ Macfarlane JT, Ward MJ, Banks DC, Pilkington R, Finch RG. Risks from cannulae used to maintain intravenous access. *Br Med J* 1980;**281**:1395-6.

² Maki DG, Weise CE, Sarafin HW. A semiquantitative culture method for identifying intravenous catheter related infection. *N Engl J Med* 1977;**296**:1305-9.

³ Noble CJ, Morgan-Capres P, Hammer M, et al. A trial of povidone iodine dry powder spray for the prevention of infusion thrombophlebitis. *Journal of Hospital Infection* 1980;**1**:47-51.

⁴ Peters JL, Fisher C, Mehtar S. Risks from cannulae used to maintain intravenous access. *Br Med J* 1981;**282**:223.

⁵ Oberhammer EP. Contamination of injection ports on intravenous cannulae. *Lancet* 1980;iii:1027-8.

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* Similar by phage-typing, biotyping, antibiograms.

† Dissimilar by phage-typing, biotyping, antibiograms.

‡ Non-typable.