

LETTER TO THE EDITOR

THROMBOPHLEBITIS WITH DIAZEPAM AND AMPICILLIN

Sir,

( Received on September 9, 1988 )

Infusion thrombophlebitis is a common but illunderstood complication (4, 6) of intravenous infusions. Further drugs given in infusions may cause phlebitis. Conflicting reports are available about the incidence of phlebitis with diazepam, (1, 2, 5). Even commonly used antibiotics like ampicillin, in infusion increases the incidence of thrombophlebitis and worst offenders are cephalosporins, (5). Among other drugs that cause increased incidence of infusion phlebitis are tetracycline, (1) pethidine, lignocaine (2) and potassium chloride (5). In this work we have studied phlebitis caused by diazepam and ampicillin.

120 Patients admitted to the surgical wards of General Hospital, Sangli formed the material of this study (age, 15 to 67 yrs; 92 males and 28 females). Patients who were admitted to surgical wards for various conditions like hydrocele, hernia, peptic ulcer etc. were selected. These subjects required IV fluids in the post operative period during which time this study was conducted. An informed consent was obtained from the subjects studied. Group I served as a control (only fluids were given). In group II, 5 mg of diazepam was given at the beginning of infusion, infusion lasting for 24 hr. In group III, ampicillin (250 mg) was added into the infusion and given 6 hriy. The subjects in all the groups were given 2500 ml of normal saline in 24 hr in a vein over dorsum of the hand after preparation of the skin with Savlon, iodine and spirit, with due antiseptic precautions. Sterile infusion sets available in the market were used. The patients were observed for evidence of thrombophlebitis every 8 hr in the first 24 hr. The grading was done according to M.R.C. Classification (3). Based on this classification, presence of swelling, redness and induration, palpable thrombosed vein and abscess formation and constitutional symptoms were recorded. Patients who developed thrombophlebitis were kept under observation for 7 days. All cases from each group, who developed thrombophlebitis were selected for bacteriological study. Fluid from the bottle (first 5 ml of fluid from the infusion set after removing the drip) and the needle itself were selected for bacteriological study. The data was analysed using 'chi square' test.

Ten patients out of 120 developed thrombophlebitis (incidence, 8.3%) which was mild according to M.R.C. classification. In control group of 40 patients, 2 patients, developed

thrombophlebitis (incidence, 5%) whereas patients in whom diazepam was given, 6 patients had phlebitis (incidence, 15%). With ampicillin, 2 patients developed thrombophlebitis (incidence 15%). Except one patient in group II, all the other patients developed phlebitis during the period between 13 and 24 hr after starting of the infusion. Thus with diazepam the incidence was significantly more as compared to the control and group III ( $P < 0.05$ ), while with ampicillin, incidence was as in control group. The duration was also important as one patient from group II developed thrombophlebitis within 12 hr. The cultures were negative for bacteriological study in all the cases studied.

The incidence of thrombophlebitis with intravenous diazepam was reported to be 3.5% by Langdon *et al.* (2). Whereas the highest was 39% reported by Hegarty and Dundee (1). The precipitation of diazepam in water or blood was held responsible for venous irritation. Thus the variety of solvent used as base for diazepam is said to be responsible for irritant action. Diazepam with benzyl alcohol has highest incidence of infusion phlebitis, while the incidence is considerably reduced when cremophor or soyabean oil is used as solvent (1, 2). This work used diazepam dissolved in benzyl alcohol.

Ampicillin did not increase the incidence of infusion phlebitis through Thomas *et al.* (5) found higher incidence (7.5%) due to addition of ampicillin.

#### ACKNOWLEDGEMENTS

The author expresses his sincere thanks to the Dean, Government Medical College, Miraj and General Hospital, Sangli for permission to publish the paper. Thanks are also due to Dr. R. B. Ekatpure and Dr. S. V. Jadhav for their assistance.

M. SUBRAHMANYAM

*Department of Surgery,  
Dr. V. M. Medical College, Solapur - 413 003*

#### REFERENCES

1. Hagarty, J. G. and T. W. Dundee. Sequale after IV injection of 3 benzodiazepines. *Br. Med. J.*, 2 : 1384-1385, 1977.
2. Langdon, D. E., J. R. Harlan and R. L. Bailey. Thrombophlebitis with diazepam used intravenously. *J. Amer. Med. Ass.*, 223 : 184-185, 1973.
3. M. R. C. Trial - Thrombophlebitis following intravenous infusions trial of plastic and red rubber giving sets. *Lancet.*, 2 : 595-597, 1957.
4. Subrahmanyam, M. Infusion thrombophlebitis and prevention. *Ind. J. Med. Sci.*, 35 : 77-80, 1981.
5. Thomas, E. T., W. Evans and G. B. Racz. Post infusion phlebitis. *Anaesth. Analg.*, 49 : 150-159, 1970.
6. Woodhouse, C. R. J. Infusion thrombophlebitis, Histological and clinical Features. *Ann Roy. Coll. Sur. Eng.*, 62 : 364-368, 1980.