

LETTER TO THE EDITOR

## TOPICAL EFFECT OF HEPARIN AND A CORTICOSTEROID IN PREVENTION OF INFUSION THROMBOPHLEBITIS

Sir,

( Received on March 10, 1988 )

Thrombophlebitis is a common complication of intravenous therapy with incidence of 24% to 29% (3, 6), which is rarely serious but the pain is often very bothersome (1). To minimise infusion phlebitis, various measures have been suggested (6). Woodhouse (8) used 'Movelat cream', as a preventive measure, containing 1% adrenocortical extract, 0.2% organoheparinoid, 22% salicylic acid in cream base. Application of this cream, thrice daily reduced the incidence of thrombophlebitis by one half. This prompted the author to assess the role of topically applied heparin and a steroid as prophylaxis against infusion phlebitis.

110 Patients admitted to the General Hospital, Sangli, during 1984-86 formed material for the study. They were admitted for various conditions like hydrocele, hernia, peptic ulcer etc., and required I. V. fluids in the post operative period during which time this study was conducted. All subjects were given 2500 ml of 0.9% saline over a period of 24 hr in a vein over the dorsum of the hand after preparation of the skin with savalon, iodine and spirit. The infusion sets used were the sterile sets available in the market. No drugs were used with the infusion fluid.

Group I served as control. In group II a thin film of heparin ointment, (heparin sodium, I. P., 50 IU per g) was applied 8 hrly to the skin over the drip vein for a length of 15 cm. In group III Flucinolone acetonide (Flucort ointment, 0.025%) a synthetic analogue of corticosteroid was similarly applied. 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, abscess formation and constitutional symptoms were recorded. Patients who developed thrombophlebitis were kept under observation for 7 days. Fluid from the bottle, first 5 ml of fluid from the infusion set after removing the drip and the needle itself were subjected to bacteriological study. The data was analysed using 'chi square' test.

A total of 9 patients (8.2%, 2 female and 7 male) developed thrombophlebitis in this study which was graded as mild. Table I shows grading and groupwise incidence of thrombophlebitis. Two out of 40 patients developed phlebitis in heparin group but only one of the 40 patients developed infusion phlebitis in the steroid group. Thus application of Flucort over the drip vein reduced the incidence of phlebitis ( $P < 0.05$ ) but effect of heparin application was not statistically significant ( $P > 0.05$ ) 7 of the patients who developed phlebitis after 12 hr of infusion, only 2 patients had it before 12 hr period. The bacteriological study did not show any positive culture, suggesting that phlebitis was not infective in origin.

TABLE I : Observations on thrombophlebitis following 24 hr of intravenous infusion of normal saline

No.	Group	No. of patients	No. of patients developing thrombophlebitis.		
			Total No.	Duration wise distribution	
				Upto 12 hr	13-24 hr.
1.	Group I : Control	30	6 (M)	2	4
2.	Group II : with local application of heparin ointment.	40	2 (M)	Nil	2
3.	Group III : with local application of Flucort ointment.	40	1 (M)	Nil	1
Total		110 (a)	9	2	7

(M) Mild reaction (M R C grading, 1957) with less than 7.5 cm. of vein inflamed. ('Severe' variety with 7.5 cm of 15 cm of vein-involvement of 'Extensive' variety with 15 cm of vein-involvement was not seen in this study.)

(a) Age, 13 to 68 years (92 males, 18 females)

Infusion thrombophlebitis is a major source of hospital morbidity (4, 5). As the duration of infusion increases, the phlebitis increase (1, 4, 5). Carter (1) has advised the frequent change of site of infusion though such a procedure may be troublesome. The overall incidence of thrombophlebitis was found to be 8.2% in this study. Incidence figures vary widely probably because of a difference in standardisation of technique and lack of uniformity in various studies (7).

Heparin is a physiological anticoagulant. When embedded in a suitable ointment base heparin can be absorbed through the skin (2), Woodhouse (7) used Movelat cream and found the incidence of infusion phlebitis was reduced by half. Flucort is flucinolone acetonide, a synthetic, hydrocortisone derivative; Flucinolone acetonide is the most potent among all the

corticosteroid drugs used for topical application (2) and was used separately in this study. Flucort was found to reduce the incidence of phlebitis remarkably. Also thrombophlebitis occurred after 12 hr in majority of the cases in this study. By limiting the duration of infusion to 12 hr and using a local application of Flucort the incidence of phlebitis can be substantially reduced.

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