ABSORPTION AND EFFICACY OF INTRAMUSCULAR TETRACYCLINE

Sir,

Tetracyclines are increasingly being given parenterally especially after the reports of anaphylactic shock with penicillin therapy have increased. There is no work on the parenteral dosage and blood levels of oxytetracycline on Indian patients and the present dosage recommendations are based on the experience of Western workers (Weinstein 1966). We undertook this study to estimate the serum levels of oxytetracycline after intramuscular administration to determine the adequate parenteral dose and the frequency of administration. Simultaneously we studied the clinical effectiveness in surgical and medical patients. In surgical patients the *in vitro* sensitivity tests were also done.

Two market preparations—Wolicyclin (Wockhardt Pharmaceuticals) and Terramycin (Pfizer Pharmaceuticals) were used. Each was available in the form of vial containing 10 *ml* of 5 per cent solution of oxytetracycline, various batches of each preparations being used.

Surgical patients : All adult patients admitted with multiple pyogenic abscessess were selected for this study. Each patient received 100 *mg* of one of the above preparations intramuscularly one hr before the surgical drainage of the abscess. The abscesses were surgically drained and the material was collected for bacteriological study. The patient then received 100 mg of the same preparation twice daily intramuscularly for 5 days. On the 5th day, the wound was examined and if the discharge was present, the material was collected for bacteriological studies. The two preparations were given alternately to the consecutively admitted patients. In all, seventeen patients were studied.

Patients with upper respiratory tract infection : The drug was given in the dose of 100 *mg* intramuscularly twice a day for 4 days. The two preparations were given alternately to the consecutively admitted patients. On the first day 10 ml of venous blood was collected 2 hr and 4 hr after the first injection and on subsequent days before the morning injection of tetracycline. No other antibiotic was given and clinical improvement was noted. In all, seven patients were studied.

Volunteers : Twenty young healthy volunteers were given the preparation intramuscularly in the dose of 100 mg twice a day for 3 days. The 10 ml of venous blood was collected at 2 hr, 4 hr, 6 hr after the first injeciton and thereafter before the morning injection. The plasma was separated and used for assay of oxytetracycline by cup plate method against a sensitive strain of Staphylococcus aureus.

The results are summarised in Tables I and II. The blood levels reached after a single dose of 100 *mg* intramuscularly were adequate and reached a peak by 6 hr. Even after 12 hr, significant amount was present in the plasma as can be seen from the early morning samples of 2nd to 5th day. In this respect both the products behaved similarly (Table I). None of the patients receiving either of the preparations complained of severe pain but pain with Wolicyclin was reported to be less by the patients.

TABLE I : *Serum concentration (μg/ml) of Wolicyclin and Terramycin after intramuscular administration.*

	Preparation	*No. of subjects*	*Serum levels* (μg/ml) 2 hr	4 hr	6 hr	*2nd day*	*3rd day*	*4th day*	*5th day*
Patients	Wolicyclin	4	3.7 ± 0.6	4.8 ±0.5	—	2.4 ±0.6	3.2 ±0.4	3.1 ±0.5	2.9 ±0.5
	Terramycin	3	4.1 ±0.9	5.0 ±0.7	—	1.9 ±0.8	3.1 ±0.6	2.9 ±0.6	2.9 ±0.7
Volunteers	Wolicyclin	10	3.9 ±0.3	5.1 ±0.4	6.13 ±0.2	1.5 ±0.1	2.6 ±0.2	2.6 ±0.3	2.7 ±0.2
	Terramycin	10	4.2 +0.2	4.9 +0.2	6.1 +0.3	1.7 +0.2	2.4 +0.3	2.7 +0.2	2.5 +0.2

TABLE II : *Number of virgin samples from surgical abscesses, bacteria isolated from the samples and sensitivity of the bacteria to Terramycin and Wolicylin.*

No. of samples	*Bacteria isolated*	*No. of samples*	*Sensitive to Wolicyclin*	*Sensitive to Terramycin*
17	Staphylococcus albus	12	12	12
	Staphylococcus aureus	6	4	3
	Staphylococcus haemolyticus.	4	4	4

As for clinical efficacy, both Wolicyclin and Terramycin were equally effective in multiple abscesses. Wolicyclin was slightly more effective in *in vitro* studies, which may be due to better diffusion of Wolicyclin in the medium (Table II). This may also explain less pain reported by patients receiving Wolicyclin. In all cases of multiple abseesses treated by Terramycin or Wolicyclin, there was no discharge or fever at the end of 5 days of treatment. It is concluded that Wolicyclin and Terramycin are both equally effective parenterally and a dose of 100 *mg* twice a day intramuscularly appears to be an adequate parenteral dose.

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