

DEMETHYLCHLORTETRACYCLINE IN THE TREATMENT OF GONORRHOEA*

By

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Penicillin has so far been the drug of choice in the treatment of gonorrhoea. However, in our daily work we have observed an increase in the number of penicillin-resistant cases and also drug reactions. It has become necessary, therefore, to use another antibiotic in the treatment of gonorrhoea.

There are several criteria which an antibiotic should meet before it is found suitable for routine use in the treatment of gonorrhoea. The ideal antibiotic should be therapeutically effective, easily administered, must be non-allergic and nontoxic; the cost of the drug is also of considerable importance. As most of the patients in the venereal diseases clinic are irresponsible by nature, it is also desirable that the drug be administered preferably in one dose. Such an ideal drug does not yet exist, though penicillin is known to be a drug which till now most closely satisfies these criteria.

The study detailed below is based on a trial to assess the efficacy of demethylchlortetracycline in the treatment of gonorrhoea. Demethylchlortetracycline is a broad-spectrum antibiotic derived from a strain of streptomyces aureofaciens. It is closely related chemically to tetracycline and has been shown to have several advantages which make it a valuable aid to antimicrobial therapeutic and has a greater antibiotic potency which makes it possible to achieve therapeutic activity with less weight of antibiotic. It has greater stability in body fluids due to a slower degradation. It has been shown to have a reduced renal clearance rate which produces a prolongation of the anti-bacterial levels in the body.

Material and Methods : The present study was conducted for approximately eight months at the V. D. Training Center of the Safdarjang Hospital, New Delhi. A total of 140 patients all exhibiting a clinical picture of uncomplicated acute gonorrhoea were selected in as random a manner as possible. An attempt was made to exclude those patients who were not residents of Delhi or who could not be persuaded to return to the clinic for further observation. The duration of the discharge before treatment was 1 to 3 days in 39 cases (27.9 percent), 4 to 7 days in 59 cases (42.1 percent), 8 to 11 days in 16 cases (17.4 percent), 12 to 15 days in 4 cases (2.9 percent) and more than 16 days in 22 cases (15.7 percent). In all cases sexual exposure was admitted. In most of the cases the source of infection was a stranger, only in 3 cases were the wives also infected.

Before treatment was begun, gonococci were detected in all the 136 male cases in Gram stained urethral smears; in the 4 female cases, gonococci were detected in cervical smears. Routine serum tests for syphilis were also made at this time. The diagnosis of gonorrhoeal infection was confirmed by culture and in

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most cases sensitivity tests were also undertaken. All patients were requested to attend the clinic at regular intervals or whenever called. After treatment, it was planned to re-examine the patients after 2 to 4 days, and again after approximately 7, 14, 28 and upto 3 months. At each such visit, the patient was examined for urethral discharge and a smear was made whenever discharge was present. The urine sediment was also examined microscopically for pus cells and gonococci. The prostate and prostatic fluid were also examined once during surveillance and after 3 months final serum tests for syphilis were conducted.

Four treatment schedules were used :

1. Sixteen patients were given 900 mg. of demethylchlortetracycline as a single oral dose.
2. Forty patients received a total dose of 1350 mg. of demethylchlortetracycline in divided doses 150 mg. thrice daily for 3 days.
3. Forty-four patients received a total dose of 1800 mg. of demethylchlortetracycline in divided doses 300 mg. thrice daily for 2 days.
4. Forty cases were given 1.2 mega mega units of PAM as one single injection.

TABLE No. 1

Marital Status	Sex		%	Duration of discharge before treatment			
	Male	%		Female	Days	No.	%
Single	46	33.8%	1	25.0%	1-3 days	39	27.9%
Married	87	64.0%	3	75%	4-7 days	59	42.1%
Widower	3	2.2%			8-11 days	16	11.4%
					12-15 days	4	2.9%
					over 16 days	22	15.7%
	136	100%	4	100%		140	100%

TABLE No. 2 (a)

Age of Patients		
Years	No.	%
0-15	4	2.9%
16-20	20	14.3%
21-25	60	42.9%
26-30	30	21.4%
31-35	15	10.7%
36-40	8	5.7%
41-45	2	1.4%
46-above	1	0.7%
	140	100%

TABLE No. 2 (b)

	Educational Status	
	No	%
Primary	23	16.4%
High School	62	44.3%
College	22	15.7%
Nil	33	23.6%
	140	100%

TABLE No. 2 (c)

Group	Monthly income in rupees	
	No.	%
0-100	45	32.1%
101-200	57	40.7%
201-300	24	14.2%
301-400	5	3.6%
401-above	9	6.4%
	140	100%

RESULTS

Table No. 1 shows the marital sex distribution of the 140 patients who were included in this study. It will be noted that the maximum number belong to the married group, i. e. 87 of the 136 males (or 64 percent) and 3 of the 4 females (or 75 percent). Forty six of the male patient or 33.8 percent were unmarried and 3 or 2.2 percent were widowers.

Table No. 2 (a) shows that the majority of the cases (110 cases) approximately 79%, were in the age groups of 16 to 30 years. Table No. 2 (b) shows that in 85 cases or 60.7 percent, the educational status was upto the high school. Table No. 2 (c) shows that in 102 cases or 72.8 percent, the monthly income did not exceed Rs. 200/-.

The results of treatment with the four different schedules are listed in Table No. 3.

TABLE No. 3

Schedule of Treatment	Number treated	Number followed	Cured		Failures		Reinfection
			No.	%	No.	%	
1. Demethylchlortetracycline 900 mg.	16	12	8	66.7	4	33.3	1
2. Demethylchlortetracycline 1350 mg.	40	31	25	80.6	6	19.4	2
3. Demethylchlortetracycline 1800 mg.	44	40	39	95.5	1	2.5	4
4. PAM 1.2 mega units	40	29	25	86.2	4	13.8	2

Out of the 16 (all males) treated with a single dose of 900 mg. of demethylchlortetracycline, only 12 cases were followed-up adequately, 4 cases did not return for follow-up. Eight cases were cured; of the 4 cases considered as failures, 2 cases relapsed in 1 to 7 days and the other two in 8 to 14 days. One case of reinfection was detected.

Of the 40 cases (including 1 female) treated with a total dose of 1350 mg. of demethylchlortetracycline given as 150 mg. thrice daily for 3 days, 9 cases did not return for follow-up. In this group, 25 of the 31 cases followed-up were cured; 6 cases were failures, 4 of these within 1 to 7 days and 2 cases in 8 to 14 days. Two cases of reinfection occurred in this group.

Forty four cases (including 3 females) were treated with a total dose of 1800 mg. of demethylchlortetracycline given as 300 mg. thrice daily for 2 days. Four cases did not return for follow-up. Of the 40 cases followed-up, there was only 1 failure which occurred within week a of therapy. There were 4 cases of reinfection in this group.

Forty cases (all males) were given one single injection of 1.2 mega units of PAM. Eleven of these failed to return for re-check. Of the remaining 29 cases who were followed-up, there were 4 failures, two within seven days, and the other two within 14 days. Reinfection was detected in two cases.

These four schedules of treatment have shown that the highest percentage of cures (95.5 per cent) was obtained by those patients treated with a total dose of 1800 mg. of demethylchlortetracycline. But therapy with a total dose of 1350 mg. of demethylchlortetracycline and 1.2 mega units of PAM had more or less a fairly good percentage of cure, 80.6 per cent and 86.2 per cent respectively.

It is sometimes very difficult to differentiate between reinfection and failure. We have adopted 15 days as the dividing line. The cases of re-infection seen by us were found to give a positive history of fresh exposure and there was also a sufficient time lapse between the disappearance of discharge and its subsequent reappearance usually over 15 days. The cases of failure mentioned above were those where no positive history of fresh exposure could be elicited and where the discharge had reappeared within 15 days. It is likely that those cases who defaulted immediately did so because they were apparently cured.

No side-effects were encountered with the above dosages of demethylchlortetracycline. A single dose of 900 mg. of demethylchlortetracycline was also taken uneventfully. Demethylchlortetracycline had some advantage over the PAM therapy; firstly, it could be given orally without the patient's fear of an injection, and secondly that there is no likelihood of reactions like penicillin-sensitivity.

DISCUSSION

Though PAM has stood the test of time in the management of gonorrhoea, in view of its potential disadvantages, another therapeutic agent should be employed. Several reports¹⁻⁶ testify to the efficacy of demethylchlortetracycline

as such an agent. There is however no unanimity as regards the effective dose. Using a single dose therapy, Allison¹ reported 84 per cent cure with 600 mg. and 93 per cent with 900 mg. of demethylchloracine. In our small series, we have not been able to confirm this latter finding of Allison; however our findings with a single dose of 900 mg. of demethylchlortetracycline closely approximate those of Sokoloff³ who reported cure rates of 64 per cent with this dosage. However, using a total dosage of 2700 and 3900 mg. of demethylchlortetracycline, Sokoloff reported cure rates of 90 and 100 per cent respectively. Vimla Bai⁵ has also reported a 100 per cent cure rate with the total dosage of 3000 mg. of demethylchlortetracycline. For various reasons, it may not be possible in routine out-door treatment to employ these high doses, and we would venture to suggest a total dose of 1800 mg. of demethylchlortetracycline as an effective dose for routine practice. Moreover, this dosage in our results as shown above is more effective than a single dose of 1.2 mega units of PAM.

SUMMARY

1. A total of 140 patients with acute uncomplicated gonorrhoea were treated with four different schedules, i. e., a single dose of 900 mg. of demethylchlortetracycline, total doses of 1350 mg. of demethylchlortetracycline over 3 days, 1800 mg. of demethylchlortetracycline over 2 days and one injection of 1.2 mega units of PAM.
2. The failure rates were assessed on the absence of further history of fresh sexual exposure; all recurrences occurring in 14 days were classified as failures.
3. Overall results have shown that a total dose of 1800 mg. of demethylchlortetracycline is better than the other schedules of demethylchlortetracycline and PAM.

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