

THERAPY PYOGENIC INFECTIONS OF SKIN TREATED WITH MINOCYCLINE +

By

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The constant quest for newer antibiotics and competitive instinct for promoting the merchandise encourages the abuse of antibiotics and *pari passu* opens up new vistas.

The increased incidence of anaphylactic reactions to penicillin, the first antibiotic, has led to the search of broad-spectrum antibiotics. These broad-spectrum antibiotics are being used more freely, resulting in increased resistance of the organisms to these drugs and hence the search for newer antibiotics. Further, increased production of these antibiotics has reduced their cost, leading to increased usage of these new antibiotics resulting in increased microbial resistance to these antibiotics. Thus a vicious cycle is formed and the finding of newer antibiotics has become mandatory. The search for new antibiotics still continues, and more so with the tetracycline group. Newer formulae with newer properties are being synthesized. Minocycline is a semisynthetic derivative of tetracycline having a broader antibacterial spectrum of action and is more potent than tetracycline.

Minocycline is 7-dimethylamino-6-deoxy-6-demethyltetracycline.

In this study, we are reporting the effects of minocycline in acute and chronic pyogenic skin infections.

MATERIAL AND METHODS

Patients attending the Dermatology Clinic of the Civil Hospital, Ahmedabad, who had acute or chronic pyogenic infections of the skin were selected for this trial. Fifty such patients in whom liver and kidney diseases could be excluded, were selected for the trial. A case of osteomyelitis, though not strictly a skin disease, was also included. Seven of these 50 patients were treated as outdoor patients, whilst the remaining 43 were admitted into the hospital. Barring two patients aged 7 and 11 years respectively, the ages of the patients ranged from 14 to 64 years with an average of 27 years. There were only 6 females in the entire series (this sex ratio has no significance in particular). About half the number of cases had already been treated with various other antibiotics prior to being included in the trial. The conditions treated, are listed in Table I. The table shows that the commonest conditions were folliculitis and pyodermas with 18 and 13 cases respectively. Further in 37 of these patients the condition was chronic whilst in 13 patients the condition was of an acute nature.

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TABLE I.

| Diagnosis | Number | Results* | | | | Organisms Cultured |
|---------------------------------------|--------|----------|---|---|---|--|
| | | E | G | F | P | |
| 1. Folliculitis | | | | | | |
| (a) Plain | | | | | | |
| (i) Acute | 3 | | 3 | | | Staph. aureus in 1; B hemolytic streptococci in 2 |
| (ii) Chronic | 11 | | 6 | 5 | | Staph. aureus in all |
| (b) With furuncles | 2 | | 1 | 1 | | Staph. aureus in both |
| (c) With sycosis barbae | 2 | | | 2 | | Staph. aureus in both |
| 2. Sycosis Barbae (per se) | | | | | | |
| (i) With acute infection | 1 | | | 1 | | Staph. aureus |
| (ii) With chronic infection | 5 | | 2 | 2 | 1 | Staph. aureus in all |
| 3. Pyodermas | | | | | | |
| (a) Acute | 6 | | 4 | 2 | | Staph. aureus in 4; Staph. aureus with B. hemolytic strept. and staph. aureus with B. coli, 1 each |
| (b) Chronic | 7 | | 3 | 4 | | Staph. aureus in all |
| 4. Pyoderma gangrenosa | 1 | | | 1 | | Staph. aureus |
| 5. Pemphigus with Secondary Infection | | | | | | |
| (i) Acute | 1 | | 1 | | | Staph. aureus |
| (ii) Chronic | 1 | | | 1 | | Staph. aureus with B. coli |
| 6. Eczema with Secondary Infection | | | | | | |
| (i) Acute | 1 | | 1 | | | Staph. aureus |
| (ii) Chronic | 2 | | | 2 | | Staph. aureus in both |
| 7. Hidradenitis Suppurativa | | | | | | |
| (i) With acute infection | 1 | | 1 | | | Staph. aureus |
| (ii) With chronic infection | 1 | | 1 | | | Staph. aureus |
| 8. Acne with Secondary Infection | 3 | | 1 | 1 | 1 | Staph. aureus in 2; Staph. aureus with B. hemolytic streptococci in 1 |
| 9. Hordeolum externum | 1 | | | | 1 | Staph. aureus |
| 10. Osteomyelitis | 1 | | 1 | | | Staph. aureus |

*E = Excellent, G = Good, F = Fair, P = Poor.

On selection of the case, 12 ml. of blood was collected from a vein and a urine sample obtained and routine blood, kidney and liver function tests were performed. Material was also collected from the lesion for bacteriological examination, isolation and identification of the infecting organism and for testing for the sensitivity of the infecting organisms to penicillin, streptomycin, chloramphenicol, erythromycin, tetracycline and minocycline.

Minocycline was made available in the form of capsules of two strengths, each containing 100 mg. and 50 mg. respectively. Except in one patient (the child aged 7 years), treatment was begun with a loading dose of 200 mg. in the morning followed by 100 mg. the same evening. This was followed by 100 mg. every 12 hours for a period of about 6 to 11 days, on an average about 8 days. On the last day of this bi-daily dose, blood, urine and material from the lesion was collected and checked for any variation. In 12 cases, no further treatment was given, but in 35 cases treatment was continued in dosages of 100 mg. once a day for periods as deemed necessary varying from 2 to 23 days; two of our earlier cases were given 50 mg. once a day for 11 and 17 days respectively. In the child of 7 years, mentioned before, treatment was initiated with a loading dose of 100 mg. followed by 50 mg. twice daily for 7 days and later 50 mg. once daily for a further period of 7 days. In general, the total duration of ingestion of minocycline capsules varied from 8 to 30 days. Barring cleansing agents, topically applied when indicated, no other therapy was used except in the three cases of eczema where oral corticosteroids were used.

RESULTS AND DISCUSSION

Clinically, the results of the trial were divided into 4 categories. The results were considered as excellent if the response was immediate, within 3, days, with no recurrence; good, if the response was delayed with no recurrence; fair, if the response was immediate or delayed but with recurrence either during the therapy or on withdrawal of the drug; poor, if there was no response.

The common bacteria isolated and their sensitivity to various antibiotics are shown in Table II. This table shows that the organism most commonly isolated, i. e. in 44 cases, was staphylococcus aureus; in two other cases this organism was cultured in association with 3 hemolytic streptococci and in yet two other cases in association with B. coli. In only two cases were only B hemolytic streptococci isolated. Although all these organisms were sensitive to minocycline, staphylococcus aureus was resistant to penicillin, tetracycline and streptomycin in 36, 24, and 13 cases respectively. This also shows that there is no cross-resistance between tetracycline and minocycline. In one case (case of sycosis barbae) in whom the results were judged as fair, culture of lesion at the end of therapy showed that the organism (staphylococcus aureus) was resistant to minocycline.

TABLE II

Showing resistance of the isolated organisms to various antibiotics

| Organism isolated | Total number | Minocycline | Penicillin | Streptomycin | Chloramphenicol | Erythromycin | Tetracycline |
|--|--------------|------------------------------|------------|--------------|-----------------|--------------|--------------|
| Staphylococcus aureus | 44 | None (1 after treatment)* | 36 | 13 | 11 | 11 | 24 |
| B. hemolytic streptococci | 2 | None | None | None | None | None | 1 |
| Staphylococcus aureus with B. hemolytic streptococci | 2 | None | 2 | 1 | None | None | 1 |
| Staphylococcus aureus | 2 | None | 2 | 1 | 1 | None | 1 |

*See text