

AMBULATORY TREATMENT OF PULMONARY TUBERCULOSIS*

A SURVEY OF 221 NON-EUROPEAN CASES TREATED AT CAPE DIVISIONAL COUNCIL CHEST CLINICS

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For the past 18 months ambulatory cases have been treated at the clinics of the Cape Divisional Council with streptomycin, PAS and INH.

In view of the shortage of beds for non-Europeans, and the difficulties in keeping patients at rest in bed, it was decided wherever possible to treat all cases with these drugs without regard to the nature and extent of the lesion and without any special instruction concerning bed rest except for the very ill and toxic patient.

In this survey an attempt is made to indicate the results which may be expected with this form of treatment.

Patients seen at the clinics are referred there by their medical attendants or employers, or by the health visitors or health inspectors, and are persons who have symptoms referable to the respiratory system, who have been diagnosed as a result of a mass radiological examination, or are known to have been in contact with persons suffering from pulmonary tuberculosis.

The clinic approach to patients is as follows:

1. On arrival at the clinic, histories are taken by the nurse (health visitor) in charge, with special emphasis on symptoms and contact history, and a record is made of weight and temperature. No clinical examination is made excepting where specially indicated (the numbers attending each session are extremely large).

2. All patients *over the age of 3 years* are then screened. All definite and suspect cases are referred for an X-ray film in order to confirm the diagnosis and get a permanent record of the lesions for control during the period of treatment. These X-rays are repeated at first at 3-monthly intervals but when changes are likely to be minimal the period is prolonged to avoid overcrowding the X-ray department.

With children *under the age of 3 years*, a tuberculin test is done and, when positive, or where the clinical appearance of the patient indicates it, a film is taken. We do not regard the screening of young children as satisfactory.

3. Weekly sputum tests are made on suspect cases until a positive result is returned, or until 3 negative results and a negative culture are returned; after this sputum tests are done at monthly intervals only.

Treatment is commenced without waiting for sputum results, and the sputum is often converted to negative before all the tests have been made; often before 4 specimens have been returned treatment has made it difficult for an early case to produce sputum at all.

The erythrocyte sedimentation rate (E.S.R.) is measured by the Westergren method by one of the health visitors or clinic sisters who has been specially

trained in this procedure; this test is repeated at approximately monthly intervals during treatment. Owing to a technical fault early on in the commencement of this work, no comparative ESR figures are available for many of the cases, but I have the impression that a drop in ESR runs parallel with improvement in weight, sputum and radiological appearance in this series.

The tuberculin test used at the clinic is either an Evan's patch test or an Old Tuberculin intradermal test in a strength of 1/1000 or 1/500. At the moment negotiations are in progress to introduce the standard PPD intradermal test.

4. The treatment adopted is ambulatory in every case except in seriously-ill patients, who are treated for short periods at home until sufficiently recovered to come to the clinic for injections.

The drugs used are streptomycin, PAS and INH, in the following dosage for adults: (a) Streptomycin, 1 g. intramuscularly 3 times a week, (b) PAS, a total of 12 g. daily in 3 divided doses, (c) INH, a total of 300 mg. daily in 3 divided doses.

If on the first repeat X-ray, 3 months after commencement of treatment, improvement is satisfactory, PAS is discontinued and only streptomycin and INH are given. After 6 months or longer, streptomycin is reduced to twice a week only, and this regime is continued for 12-18 months or, in some cases, longer.

At any time during treatment a patient, if considered fit and non-infectious, is allowed to return to duty under supervision and, wherever possible, injections are given by the factory sister or special arrangements are made for injections to be given at the clinic at times convenient to the employee.

In children under the age of 6 years, INH and PAS are given roughly according to Young's formula, but streptomycin in the dosage of $\frac{1}{2}$ g. 3 times a week whatever the age up to 6 years. Latterly, however, we have decided not to use PAS at all in children owing to toxicity and difficulty in administration and control.

RESULTS

The patients are surveyed here in 3 groups:

Group 1: Children (non-European, mostly Cape Coloured) up to 6 years of age (60 cases),

Group 2: Adults (Cape Coloured) male and female (139 cases),

Group 3: Adults (African) male and female (22 cases).

Group 1. Non-European Children up to 6 years of age, mostly Cape Coloured, (60 cases)

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TABLE I. ANALYSIS OF GROUP

| | Deaths | Ab-sconded | Admitted to Hospital | Cases Treated | Total |
|-----------------------------------|--------|------------|----------------------|---------------|-------|
| Treatment up to 6 months .. | 8 | 4 | 12 | 26 | 50 |
| Treatment longer than 6 months .. | 0 | 0 | 2 (a) | 8 | 10 |
| Total .. | 8 | 4 | 14 | 34 | 60 |

(a) Both developed tuberculous meningitis.

TABLE II. ANALYSIS OF THE 8 CASES WHICH DIED AND 3 CASES WHICH DEVELOPED COMPLICATIONS

| Age (Mths.) | X-ray Appearance | Period of Treatment | Result |
|-------------|---|---------------------|-----------|
| 9 | No X-ray | 5 days | Died. |
| 20 | Miliary infiltration | 4 months | Died. |
| 17 | Solid R.U.L. | 3 months | Died. |
| 12 | Bilat. disease huge cavities L. lung. | 23 days | Died. |
| 3 | No X-ray | 13 days | Died. |
| 17 | Blackout L. lung. Gross disease R. | 30 days | Died. |
| 24 | Gross bilat. disease | 2 days | Died. |
| 48 | Huge hilar mass | 21 days | Died. |
| 30 | R. hilar glands. L. infiltration from hilum to periphery. | 30 days | Tub. hip. |
| 25 | Miliary tub. | 8 months | Tub. men. |
| 42 | Right upper lobe solid with miliary inf. | 6 months | Tub. men. |

TABLE III. TOXIC EFFECTS OF DRUGS (10 CASES)

| Treatment longer than 6 Months | Treatment less than 6 Months | Amount of Drug |
|--------------------------------|------------------------------|----------------|
| Epilepsy aggravated. | | |
| Diarrhoea and rash | .. | P.A.S. 114 g. |
| Diarrhoea and vomiting | .. | P.A.S. 209 g. |
| Rash (recommenced) | .. | Strep. 34 g. |
| Diarrhoea and vomiting | .. | P.A.S. 45 g. |
| Diarrhoea and vomiting | .. | P.A.S. 42 g. |
| Vomiting | .. | P.A.S. 42 g. |
| Rash | .. | P.A.S. 282 g. |
| Diarrhoea (? worms) | .. | P.A.S. 147 g. |
| Vomiting | .. | P.A.S. 375 g. |

TABLE IV. CHANGES IN WEIGHT DURING TREATMENT

| | Stationary | Gain | Loss |
|-----------------------------------|------------|-------|-------|
| Treatment up to 6 months .. | 2 | 20 | 4 |
| Treatment longer than 6 months .. | 0 | 9 (a) | 1 (b) |
| Total .. | 2 | 29 | 5 |

(a) One case developed tuberculous meningitis.

(b) Developed tuberculous meningitis.

TABLE V. RADIOLOGICAL CHANGES

| | No change | Improved | Deterioration | No record |
|-----------------------------------|-----------|----------|---------------|-----------|
| Treatment up to 6 months | 10 | 10 | 0 | 6 |
| Treatment longer than 6 months .. | 1 | 7 (a) | 1 | 1 |
| Total | 11 | 17 | 1 | 7 |

(a) Two cases developed tuberculous meningitis.

Group 2. Cape Coloured Adults, male and female (139 cases)

The results of this treatment in children are considered as most satisfactory. Early diagnosis, however, is essential; most of the cases who died were extensively diseased.

It would appear that tuberculous meningitis may develop despite fairly extensive treatment and apparent radiological improvement.

TABLE VII. TOXIC EFFECT OF DRUGS IN ADULTS (11 CASES)

| Treatment longer than 6 Months | Treatment less than 6 Months | Amount of Drug |
|--------------------------------|------------------------------|-------------------------|
| Rash | | PAS 708 g. |
| Indigestion | | PAS 204 g. |
| Rash | | PAS 210 g. |
| Diarrhoea | | PAS 550 g. |
| Fever and rash | | PAS 96 g. (a). |
| Nausea | | PAS 808 g. |
| Giddiness | | S/M 111 g. (b). |
| Joint pains | | INH 930 tabs. (50 mg.). |
| Joint pains | | INH 690 tabs. (50 mg.). |
| Rash and conjunctivitis | | S/M 105 g. (c) |
| Neuritis | | INH 462 tabs. (50 mg.). |

(a) Admitted to hospital.

(b) Hypertension; (c) Asthmatic. W.R. +.

TABLE VIII. CHANGES IN WEIGHT DURING TREATMENT

| | Stationary | Gain | Loss |
|-----------------------------------|------------|------|------|
| Treatment up to 6 months .. | 5 | 29 | 18 |
| Treatment longer than 6 months .. | 0 | 37 | 16 |
| Total | 5 | 66 | 34 |

The results of treatment are regarded as most satisfactory, although it is clear that certain cases will not recover or become non-infectious from this treatment, and will require to be hospitalized and receive the more complicated treatments which are only available in institutions

TABLE VI. ANALYSIS OF WHOLE GROUP

| | Deaths | Absconded | Admitted to Hospital | Non-coop. Treatment Discontinued | Left Area | Cases Treated | Total |
|-----------------------------------|--------|-----------|----------------------|----------------------------------|-----------|---------------|-------|
| Treatment up to 6 months | 1 (a) | 4 | 16 | 3 | 2 | 52 | 78 |
| Treatment longer than 6 months .. | 1 (b) | 2 (v) | 1 (d) | 4 (e) | 0 | 53 | 61 |
| Total | 2 | 6 | 17 | 7 | 2 | 105 | 139 |

(a) Aged 58 years, sudden death, minimal tuberculosis, ? cause.

(b) Aged 59 years, R.U.L. disease, sputum positive. ? Carcinoma complicating tuberculosis.

(c) After 7 months' treatment.

(d) Sputum still positive after 7 month's treatment.

(e) Quiescent; patient working and unable to attend.

TABLE IX. EFFECT OF TREATMENT ON SPUTUM

| | Positive | Negative | No Specimen | Total |
|---------------------------------|----------|----------|-------------|-------|
| At commencement of treatment .. | 66 | 33 | 6 | 105 |
| Treatment less than 6 months .. | 10 (a) | 26 (b) | 16 (e) | 52 |
| Treatment more than 6 months .. | 4 | 45 (d) | 4 | 53 |
| Total .. | 14 | 71 | 20 | 105 |

- (a) 3 sputa positive on culture only.
 (b) 4 cases still active radiologically and clinically.
 (c) 2 cases still active radiologically and clinically.
 (d) 1 case still active radiologically and clinically.

TABLE X. RADIOLOGICAL CHANGES

| | No Change | Improved | Deteriorated | No Record |
|-----------------------------------|-----------|----------|--------------|-----------|
| Treatment up to 6 months .. | 9 | 37 | 2 | 4 |
| Treatment longer than 6 months .. | 5 | 41 | 5 | 2 |
| Total .. | 14 | 78 | 7 | 6 |

TABLE XI. FITNESS FOR WORK

| | Fit for Work | Fit Shortly | Total |
|------------------------------|--------------|-------------|-------|
| Treatment less than 6 months | 13 (a) | 13 | 26 |
| Treatment more than 6 months | 33 | 5 | 38 |
| Total .. | 46 | 18 | 64 |

- (a) 3 patients never off work.

Group 3. African Adults, male and female (22 cases)

This group forms a problem. The results are not so satisfactory as in the first two groups, the reasons being that the Africans are a much more migratory group and are much more difficult to control.

Despite efforts to keep even sputum-positive patients at work so as to maintain a better control over them, we have not been very successful, and the habit of Africans to return for prolonged holidays to their Transkeian homes each year has added to the difficulties.

TABLE XII. SHOWING NUMBER OF DEFAULTERS, WEIGHT CHANGES AND RADIOLOGICAL CHANGES

| Total 22 | | | | | |
|-----------------------|------------------|----|----|----|-------|
| Defaulters: | males .. | .. | .. | .. | 7 (a) |
| | female .. | .. | .. | .. | 1 (b) |
| | Total .. | .. | .. | .. | 8 |
| Weight changes: | lost weight .. | .. | .. | .. | 8 |
| | gained weight .. | .. | .. | .. | 5 |
| | no record .. | .. | .. | .. | 1 |
| Radiological changes: | improved .. | .. | .. | .. | 6 |
| | no change .. | .. | .. | .. | 4 |
| | deteriorated .. | .. | .. | .. | 1 |
| | no record .. | .. | .. | .. | 3 |

- a) All allowed to work. (b) Left to have a baby.

TABLE XIII. EFFECTS OF TREATMENT ON SPUTUM

| | Negative | Positive | No Record |
|-----------------------|----------|----------|-----------|
| Before Treatment .. | 7 | 5 | 2 |
| Less than 6 months .. | 5 | 1 | 3 |
| More than 6 months .. | 3 | 2 | 0 |
| Total .. | 8 | 3 | 3 |

SUMMARY

A series of 221 Cape Coloured and African patients given ambulatory treatment for pulmonary tuberculosis is surveyed. The results are regarded as satisfactory for children up to the age of 6 years when treatment is started early on, and for a large number of Cape Coloured adults, but not for Africans, in whom control is a serious difficulty.

It is not intended that this treatment should take the place of hospitalization, but it would appear to be a fairly satisfactory substitute in cases for whom a hospital bed is not available or where the patient is unwilling to be hospitalized, and in cases where the lesion is minimal.

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