

Experience in the Treatment of Pulmonary Tuberculosis in Africans in Salisbury

BY

J. R. QUANTRILL, M.B., B.CH., D.P.H.

Late Senior Clinical Medical Officer, City of Salisbury.

With the ever-increasing number of admissions to hospital of patients suffering from pulmonary tuberculosis and the increasing number of treated cases attending for follow-up at out-patient clinics, it may be of interest to record one's experience in the treatment of pulmonary tuberculosis in Africans who have been admitted to hospital and subsequently followed up as outpatients.

The city of Salisbury enjoys a favourable position in regard to the follow-up management of discharged cases of pulmonary tuberculosis, because both the hospital and the follow-up clinic are administered by the municipality,

thus ensuring good liaison between the hospital and the clinic and uniformity of treatment throughout.

(1) MATERIAL

This study comprises 118 cases who have been treated in hospital and were able to be followed up as outpatients. Patients are admitted from a wide area around Salisbury, but priority is given to urban cases.

The chart below gives the age and sex distribution of the cases (Chart 1). It will be seen that the greatest incidence occurs in males in the 20-30 age group. This is in keeping with the findings of other authors (Ovedoff and Sneider, 1958¹) in dealing with urbanised Africans.

(2) HOSPITAL MANAGEMENT

On admission, the patients are told of the nature of their disease and that they must expect to be in hospital for at least six to eight months. Because their families are able to return to a reserve or be cared for by relatives, most Afri-

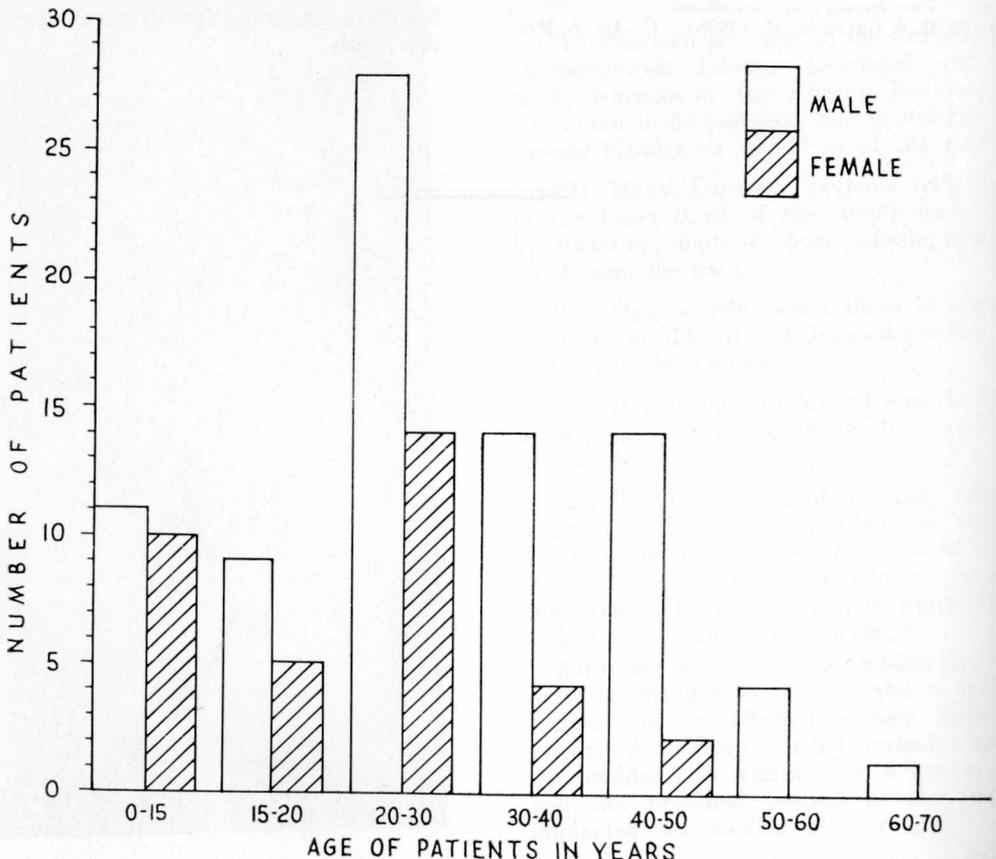


CHART 1

cans are prepared to accept this. This is in contrast to the Union of South Africa, where the African has become more urbanised and thus unable to make provision for dependants by sending them back to a reserve.

Treatment in Hospital

The basic hospital treatment is:

- (i) Streptomycin: 1 g. daily for thirty days, followed by a rest period of thirty days, and then another thirty daily injections, again followed by a rest period of thirty days; and then a final course of thirty daily injections, giving a total of 90 grams of streptomycin.
- (ii) Continuous dosage of I.N.H. in a dosage of:
 - (a) 5 mg. per kg. of body weight for two months; then
 - (b) 10 mg. per kg. of body weight for the remainder of their stay in hospital.
- (iii) Continuous dosage of P.A.S. in a dosage of 1 gram per 5 kg. of body weight per day.

Pellagrous patients are carefully sought for before treatment and given, with their I.N.H., big doses of vitamin B complex in the form of brewers' yeast tablets to prevent toxic peripheral neuritis.

Toxic peripheral neuritis, when it occurs, is treated by stopping the I.N.H. and giving pyridoxine injections 50 mg. intravenously once weekly, together with brewers' yeast tablets daily. The daily diet consists of a 3,500 calorie diet for adults, which includes one pint of milk.

(3) PROGRESS IN HOSPITAL

This is recorded on a special card and records:—

- (i) Sputum analysis once weekly for acid-fast bacilli.
- (ii) The E.S.R. once monthly. (This is done by the Westergren method.)
- (iii) Weight once weekly.
- (iv) X-ray chest once every three months after initial admission plate.

The initial X-ray plate was classified into a group by the severity of the X-ray appearances as follows:

Grade I.—The total area of disease in both lungs occupies the area of one apex.

Grade II.—The total area of disease in both lungs occupies an area equal to half of one lung field.

Grade III.—The total amount of disease occupies an area equal to the whole of one lung field or more.

Cavitation is included in the above assessment of the area involved.

This classification is based on a Union of South Africa Health Department circular kindly supplied by Dr. B. A. Dormer, King George V Hospital, Durban.²

Of the 118 cases studied in this report. Grade

I included 24 patients, Grade II included 58 patients and Grade III included 36 patients.

As patients improve on treatment as shown by a gain in weight and a drop in E.S.R. or sputum conversion, they are moved to another ward and in this way the patients feel that they are making progress. Three wards are kept for this purpose and the average length of stay in each ward is two months. In the last or pending discharge ward the patients who have a negative sputum are allowed certain privileges, e.g., leave on a Sunday and the use of footwear. Only those patients who have had a negative sputum for nine consecutive weeks are permitted to leave the hospital.

Due to the constant disciplinary control necessary in dealing with long-term tuberculosis patients, the granting of privileges is valuable, not only as a reward for good behaviour, but as a means of punishment when the privileges can be withheld.

(4) RESULTS OF TREATMENT

(i) *Sputum.*—On analysing 76 consecutive cases admitted with a positive sputum, it was found that it took an average of 3.6 months to convert to negative on the above treatment. Patients were kept for a minimum period of twelve weeks in hospital after the sputum remained negative. Patients with nine consecutive weeks' negative sputa are permitted to leave the hospital on a Sunday.

(ii) *Weight.*—Almost all patients put on weight, and of the adults (i.e., above 15 years) among the 118 cases, an average weight gain of 18 lb. took place during their stay in hospital.

(iii) *E.S.R.*—In most cases the E.S.R. dropped with a corresponding improvement in the general condition, X-ray appearance or sputum conversion.

(iv) *Stay in Hospital.*—The average duration of stay in hospital of the 118 cases was 6.8 months and is recorded in the chart which follows (Chart 2).

(v) *Toxic Manifestations.*—

(a) *Peripheral Neuritis.*—Twelve cases developed peripheral neuritis as evidenced by paraesthesias of the hands and feet. All the cases were adults and all except two were males. One of the twelve also had persecutory delusions directed against the nursing staff. With the stopping of I.N.H. and treatment with pyridoxine, all the cases except one were cured or improved within eight weeks. One case still had tingling of the fingers after six months, which never entirely disappeared.

(b) *Streptomycin and P.A.S.*—Toxic reactions, e.g., dizziness and deafness with streptomycin and symptoms of gastro-intestinal disturbance, e.g., nausea and diarrhoea, with P.A.S. tablets occurred, but unfortunately records were not kept of the number of patients affected.

(5) DISCHARGE FROM HOSPITAL

When a patient has had a negative sputum

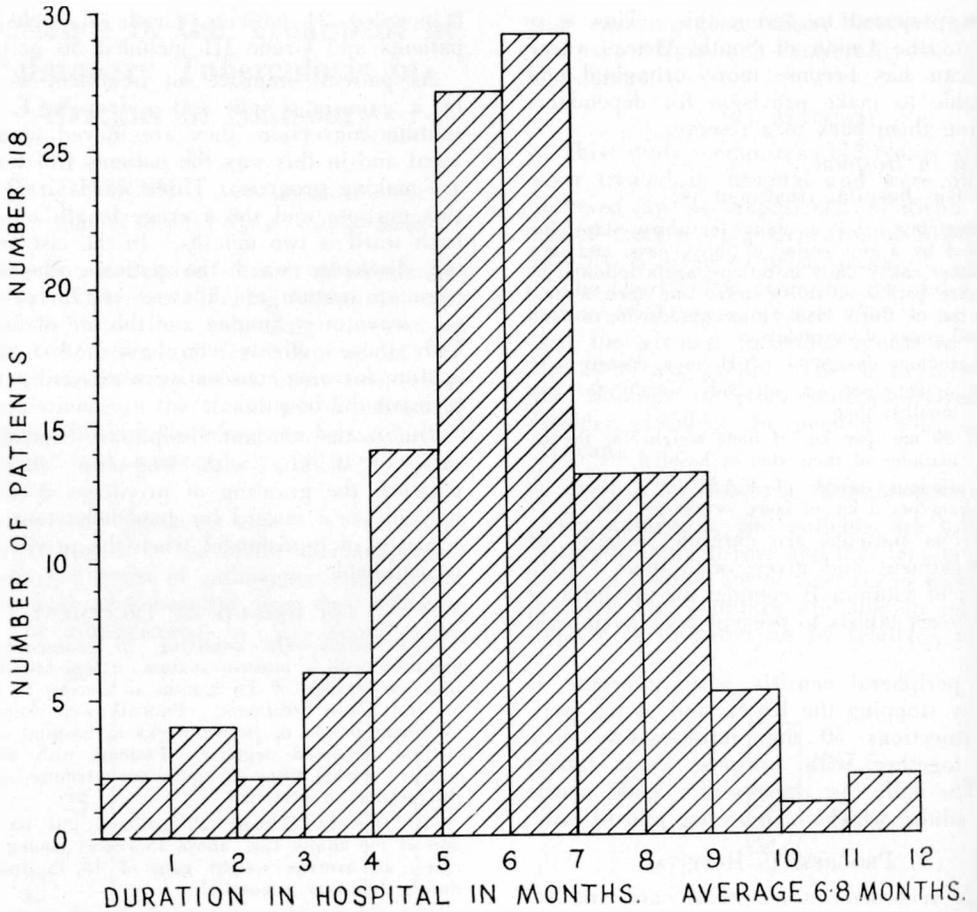


CHART 2

for 12 consecutive weeks, has an E.S.R. below 15/1 and has cleared radiologically, as evidenced by the disappearance of the cavities, consolidation or effusion, or the replacement of such lesions by fibrosis, he is considered fit for discharge. Every patient is detained if one of these three criteria cannot be satisfied. In many cases a raised E.S.R. only prolonged hospital stay. Every child (below 15) is, however, kept in hospital a minimum of six months, if possible, if the original lesion is thought to be more than a primary complex.

(6) FOLLOW-UP AT OUTPATIENT CLINIC

It must be stressed that the 118 cases referred to above are those who presented themselves for the follow-up at the clinic and, because of the high incidence of defaulting, only includes those who attended for clinical follow-up on more than two occasions.

Many discharged cases were not seen again

because they either left for their homes in outlying areas or failed to report at the clinic and were not able to be traced from an address. The cases discharged to the country were interviewed by the government health inspector prior to discharge and told of their nearest clinic or hospital.

The outpatient clinic is situated about a mile from the Native Infectious Diseases Hospital in the Harari Location. Every case discharged from the hospital reports the following morning to the clinic and a follow-up card is made out for him. His X-rays have already been collected the previous evening from the hospital and taken by the clinic nurse to the clinic for filing.

On the follow-up card is recorded the patient's name, age, sex, hospital number, date of admission, date of discharge, admission E.S.R., discharge E.S.R., admission sputum—whether positive or negative—and the sputum conversion date.

There are two additional paragraphs for (i) original X-ray findings; and (ii) treatment. On the back of the card is recorded progress under the following headings: Date, Weight, Sputum, Cough and Remarks, where is entered the patient's complaints, condition on examination, latest X-ray findings, recommended further treatment and recommended date of next visit to the clinic.

Cases to be followed up, i.e., cases who will again take up residence in the municipal area or within easy reach of the clinic, are given two weeks' supply of I.N.H. and P.A.S. tablets and 2 lb. of skimmed milk powder. This is sufficient to give 16 pints of milk. The I.N.H. and P.A.S. tablets are issued in envelopes with two weeks' supply already counted out:

Eighty-four I.N.H. tablets (50 mg.) and 168 P.A.S. tablets (0.5 g.), i.e., based on a daily dosage of 300 mg. I.N.H. daily and 6 grams of P.A.S. daily.* This dosage is to facilitate the taking of the tablets, as "Take two small tablets and four large tablets three times a day" is readily understood by the patients and makes the administration of the clinic much easier.

The patients come every two weeks for the tablets and on each occasion receive milk powder. The milk acts as an inducement to attend regularly and is a supplement to the diet.

The names of patients who are not attending regularly can easily be obtained from the book in which are recorded the number of tablets and the amount of milk powder issued on each occasion.

After one month the patient is re-X-rayed, the weight recorded, sputum examined for tubercle bacilli and the urine tested for P.A.S.^{3, 4} (Briefly, the test consists of adding six drops of urine to 5 ml. (c.c.) of water and then adding one drop of a 3 per cent. solution of ferric chloride and waiting half a minute. If positive, a lilac colour develops.) A clinical examination is also done to re-assure the patient and ascertain whether any deterioration has occurred or whether pregnancy has developed.

Depending on the results of these investigations, the patient is told to report back for a further follow-up examination on a certain date, which is in one, two or three months' time. His card is then filed under that particular month so that again the defaulters can be detected at the end of every month.

The clinic is working at the moment on the assumption that drug treatment must be persisted with for at least eighteen months following discharge from hospital. (Dr. I. Briggs, Kitwe, N.R.; personal communication.⁵)

* Adult dosage.

An item of interest is the expense of drug treatment for this length of time.

It is calculated that with an average stay in hospital of 6.8 months and a follow-up of 18 months, a typical patient will consume almost 5,000 I.N.H. tablets and 10,000 P.A.S. tablets. At Government prices this costs £1 10s. for I.N.H. and £7 10s. for P.A.S. tablets for each patient. A streptomycin course costs £3 16s. 6d., giving a total cost for drug therapy of £12 16s. 6d. for each case.

(7) SOME RESULTS OF CLINIC FOLLOW-UP

As already pointed out, these patients represent those who *did* present themselves for follow-up and is therefore already a selected group as regards co-operation in the taking of tablets and clinic attendance and the liability to relapse. The figures quoted below represent the results of a year's work at the clinic and therefore have very little statistical value.

(i) *Number of Follow-up Visits to the Clinic*—

Four hundred and twenty visits were paid by the 118 patients to the clinic, giving an average of 3.6 visits per patient per year.

(ii) *Taking of P.A.S.*—

Surprisingly, the P.A.S. test on the urine was positive in a very high percentage of cases. Of 256 tests done, 212 were recorded as positive. The largest number of negative reactions occurred among the children. This would indicate that a more palatable form of P.A.S. might be more suitable for children.

(iii) *Loss of Weight*—

The average loss of weight for each adult case on the first clinic attendance was 2 lb. This is not unexpected in view of the inactivity while still in hospital. At the end of the year 36 (30.5 per cent.) were the same weight, 54 (45.8 per cent.) had lost weight (average 5.1 lb.) and 28 (23.7 per cent.) had gained in weight (average 5 lb.).

(iv) *Relapses*—

Twelve cases relapsed as evidenced by X-ray deterioration, sputum examination, loss of weight or recurrence of symptoms of cough and pain in the chest (two of these cases produced a positive sputum at the clinic).

Only the children and those cases with a positive sputum or marked deterioration in X-ray appearance were re-admitted to hospital. The remainder were kept as outpatients and brought back monthly for a check-up.

This gives a relapse rate of 10.7 per cent.

The following chart gives an analysis of the cases which relapsed as regards age, sex, length of time after discharge from hospital, original X-ray grade, whether sputum positive in hospital and whether taking tablets regularly.

Chart 3

Patient's Name	Sex	Age in Years	Original Sputum Result	Original Radiological Grouping	Length of Time Following Discharge from Hospital	Whether Taking Tablets Regularly
John	M	45	Positive	3	1 month	Yes
Patrick	M	2	Negative	1	2 months	No
Ndumtuzi	M	3	Negative	1	2 months	No
Lucia	F	30	Positive	3	2 months	Yes
Emily	F	28	Positive	2	4 months	Yes
Vaida	F	17	Positive	2	4 months	No
Erica	F	30	Positive	2	5 months	No
Wilson	M	40	Positive	2	6 months	Yes
Joshua	M	48	Positive	3	7 months	No
Levi	M	30	Positive	2	12 months	No
Muziwa	M	40	Positive	3	12 months	No
Rosemary	F	21	Negative	3	12 months	No
	(Preg.)					Yes = 4 No = 8

It will be seen that four of the twelve patients were taking tablets regularly. The remainder were irregular in attendance at the clinic.

This clinic has only been in existence for one year. As the number of patients on the outpatients' register increases it will be interesting to see how the figures above compare with future findings.

SUMMARY

The results of the treatment of pulmonary tuberculosis in Africans and their follow-up as outpatients during one year following discharge from hospital are recorded in this study. This is presented so that it may be of interest to others in the Federation who are faced with the

same problems of continuity of treatment in tuberculosis in Africans.

Acknowledgments

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