Treatment of Leprosy with Clofazimine, Rifampicin and Bayrena

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In Africa, 8% of leprosy patients have the lepromatous form, and 85% have the tuberculoid form of the disease. Treating these patients with dapsone needs several years to produce good results, treatment with acedapsone is still in the experimental stage, and rifampicin is too expensive. There are two drugs remaining; clofazimine, which is the treatment of choice for those with lepromatous leprosy, and sulphanilamides, treatment for the tuberculoid form of leprosy and for acute inflammation of the peripheral nerves.

Since 1968 we have used some drugs that have shown activity against *Myco. leprae*: clofazimine, rifampicin and Sulphamethoxypyrimidine.

Clofazimine

Clofazimine (B663, Lamprene) seems to us the most interesting antileprosy drug because it is active in three ways: Specific; Anti-inflammatory; Efficacy of action on Myco. leprae that are resistant to dapsone or sulphonamide.

Specific activity

We have experience of clofazimine given daily or weekly. For daily treatment we used 100 mg for adults. We have already treated 70 patients suffering from the lepromatous form of leprosy, and after 1, 2 or more years of treatment we have always obtained good results, which were presented by English speaking leprologists at the London Conference in 1968. That is to say:

Identical activity with that obtained with dapsone (Disulone) at a dosage of 100 mg daily, both from the clinical and bacteriological point of view;

- Rarity of lepromatous reactions;
- Perfect tolerance among African patients.

Mass treatment is the rule in Africa, where thousands of leprosy patients are scattered over vast territories.

In a double blind trial, we have compared the activities of clofazimine and dapsone given once weekly to 2 groups of adult leprosy patients previously treated or untreated. The first group received a weekly dose of 600 mg

clofazimine, the second group a weekly dose of 600 mg dapsone. After 24 months of regular treatment, the results were as follows.

Clinical improvement has been obtained in all cases, and the Amelioration Index of 2.23 in the dapsone group and 2.20 in the clofazimine group permits the conclusion that the clinical improvement is comparable in both groups.

Similar comparison of the Bacteriological Index before and after treatment has shown a bacteriological reduction of 60% with dapsone and 70% with clofazimine. The bacteriological results are thus slightly superior with clofazimine.

Of particular interest is the fact that ENL appeared only among 2 patients treated with clofazimine. The reactions have been single and benign. Severe and repeated reactions occurred in 8 patients treated with dapsone. Tolerance of the drug was good. Liver and kidney function, as well as blood and skin condition, did not deteriorate. There are no problems with African patients concerning the red pigmentation caused by clofazimine.

As a specific treatment for the lepromatous type of leprosy, clofazimine has similar activity to dapsone in both clinical and bacteriological improvement, while clofazimine induces fewer reactions.

Anti-reactional activity

For many years we treated systematically all reactional patients with clofazimine; most had lepromatous leprosy and presented with severe reaction or repeated reactions. The dosage given of 300 mg daily to 600 mg daily has varied according to the seriousness of the signs. General and cutaneous signs disappeared between 15 and 30 days, but we continued treatment until C-reactive protein became negative, generally between 30 and 60 days. We then progressively decreased the dosage of clofazimine to 100 mg a day. With this specific and anti-inflammatory therapy, 98% of our 41 cases have improved without developing further reactions.

Activity of clofazimine on Myco. leprae resistant to dapsone and other drugs

Up till now we have treated 15 patients with lepromatous leprosy who presented with very slow clinical improvement or even aggravation and increase of the Morphological Index above 30% in the nasal mucus and skin. Mouse footpad tests are not available to us, but we consider the above mentioned aspects as signs of resistance. Of these 15 patients 12 received dapsone and 3 Sulphorthomidine. After having stopped the specific treatment, all patients received clofazimine in a dosage of 300 mg a day for 6 months, which gave us a good clinical and bacteriological response. After a period of 3 months with 200 mg clofazimine daily we reduced the dosage to 100 mg per day without recommencing specific treatment. After 1 year of treatment good clinical improvement was obtained, a fall of the Morphological Index to 2 or 3%, and a reduction of 50% in the Bacteriological Index.

In conclusion, clofazimine has the same degree of activity as dapsone, and because of its anti-inflammatory action it is the treatment of choice in patients with lepromatous leprosy in reaction. Patients who are resistant to dapsone or other drugs respond very well to treatment with clofazimine. In Africa where the follow up of patients is difficult, clofazimine should be used in the treatment of lepromatous leprosy.

Rifampicin

According to the work of Rees *et al.*, Leiker and Dormer, and others, we have tried rifampicin on several patients. We have already reported results obtained after treatment for 1 year in 22 patients with lepromatous leprosy. One group of 6 patients received 900 mg a day; the second group of 12 patients received 600 mg a day; the third group of 6 patients received 300 mg a day. The best results were obtained with a daily dose of 900 mg; from the clinical point of view, decrease or disappearance of lepromata, decrease in generalized infiltration, cessation of epistaxis, improvement of rhinitis and laryngitis in 2 cases. Treatment with a daily dosage of 600 mg has given slightly inferior results, the amelioration rate being 2.3 as against 2.8.

From the bacteriological point of view the assessment of the Morphological Index has been done monthly for 8 months, and shows a rapid fall with 900 mg and 600 mg rifampicin daily to 0% within 4 to 5 months. The same result was obtained with dapsone treatment within 6 months. Improvement in the Bacteriological Index has been greater with 900 mg (1.35) than with 600 mg (1.25). With a daily dosage of 300 mg, the Bacteriological Index showed less good results.

Reaction occurred in all 3 groups; but tolerance was good and no side-effects occurred. The daily dose of rifampicin was kept at 600 mg and 900 mg because of the high cost of the drug. This drug should be reserved for special cases, and such patients who have both leprosy and tuberculosis.

Following the work done in Zaire by Belgian phthisiologists and by Pattyn, we have treated patients with lepromatous leprosy with a weekly dose of 30 mg/kilo body weight for 5 months. Thereafter we continued with 225 mg acedapsone every 75 days by injection. Our experiments are continuing, but we can already affirm that a weekly dose of 30 mg/kilo body weight of rifampicin gives the same bacteriological response as a daily dosage of 900 mg.

Sulphamethoxypyrimidine

Since 1958, we have used long-acting sulphonamides in patients with tuberculoid leprosy and neuritic lesions, giving first a weekly dose of 1.5 g of Sulphorthomidine and then 750 mg sulphamethoxypyridazine (Lederkyn) every 2 days. We have reported good results between 1959 and 1972. Now we have under experiment a new sulphanilamide, Sulphamethoxypyrimidine, the formula of which is 2-sulphamide-5-methoxypyrimidine. We administer 750 mg every 2 days to adult patients. Tolerance has been good, for the blood status as well as the skin condition. Out of 35 patients, 20 have received this drug for 1 year, their classification being as follows:

Tuberčuloid leprosy	7
Interpolar (borderline)	4
Lepromatous	9

In 1 patient with tuberculoid leprosy, skin lesions have disappeared, while the other 6 cases have much improved. Out of 3 patients who had claw hands, 2 are totally cured, and the third has improved considerably. This sulpha drug has thus a quick and excellent effect in the therapy of allergic tuberculoid forms and neuritic lesions. The 4 patients with interpolar leprosy showed good clinical

improvement and the Bacteriological Index fell to zero. One of them, classified histologically BT, showed a positive Mitsuda reaction. The 9 patients with lepromatous leprosy showed clinical improvement, decrease of lepromata and reduction in the infiltration of diffuse lepromatosis. Four of them have a negative nasal mucus; ENL appeared in 2 of them.

Sulphamethoxypyrimidine gives the same results as were obtained with other long-acting sulphonamides, namely:

Similar activity to that of dapsone in lepromatous and interpolar types of leprosy;

Lowered tendency to reactions;

Perfect tolerance, particularly with regard to the skin.