

BERBERINE HYDROCHLORIDE AS A TREATMENT OF ORIENTAL SORE (A preliminary report)

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Summary

“Berberine hydrochloride as a 2 per cent solution was used in 54 cases of Oriental sore which were positive for *Leishmania tropica* (L.T.) bodies by smear examination and devoid of secondary infection. The salt was used intralesionally. Cure rate noted was 87 per cent with an average cure rate time of about 4 weeks. Face lesions showed marked inflammatory reaction and slow response to treatment. The drug was otherwise well tolerated and was found safe for all ages”.

Berberine is an alkaloid chiefly obtained from the plant *Berberis aristata*. The formula of Berberine is $C_{20}H_{19}O_5N$ and its molecular weight is 353¹. *Berberis* is known in the indigenous system of medicine as “*Daruharidra*” and has been used for a long time as an antipyretic and carminative and in the form of ointment for treatment of indolent ulcers². The beneficial effect of the drug on chronic ulcers prompted a number of workers to use it in treating oriental sore. Continuous application of rasout — a dry extract of *Berberis indica* was found to be beneficial in some cases of cutaneous leishmaniasis³. Berberine acid sulphate (2% solution) when injected intralesionally at weekly intervals was found to be effective in treatment of oriental sore^{4,5,6}.

As per hospital statistics large number of patients are suffering from oriental sore in Bikaner but the most time-honoured drug Berberine acid sulphate (injection Orisol manufactured by M/s. May and Baker Co.) is not available in the Indian market. In this study it was planned to use another salt of berberine namely berberine hydrochloride and adjudge its therapeutic value in oriental sore.

Material and Methods

The present study comprised of 54 cases; 34 males and 20 females, between ages of 1½ years and 60 years with an average age of 22.9 years (Table I). All the cases which were included in the present study showed the presence of *Leishmania tropica* (L. T.) bodies in the smears taken from lesions. Patients who showed super-added secondary pyogenic infection were not included in this study. Any patient who received any form of local treatment within a week of the hospital visit was also not included in the present study.

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TABLE 1
Age and sex incidence of cases

Age group in years	Male	Female	Total
1—15	11	7	18
16—30	13	9	22
31—45	6	3	9
46—60	4	1	5
Total	34	20	54

Berberine hydrochloride as a 2% solution was used as the therapeutic agent in all cases. As this salt gets precipitated when kept cool, it was warmed a little prior to its use. The solution was injected by means of a tuberculin syringe with a needle of gauge 26. The needle was inserted from the edge of the sore and solution was injected. Three punctures were made at different sites from the edge of the sore so as to infiltrate the base of the lesion completely. About 1 ml of solution was sufficient for a lesion of 2.5 cm diameter. Injections were given intralesionally at weekly intervals. 1 - 12 injections were used in our cases.

Results

Number and distribution of the lesions are presented in Table 2 and 3. The patients were followed up from 1 - 12 weeks and the lesions were closely observed. Face lesions showed marked inflammatory reaction in almost all cases while at other sites, the reaction was of a mild degree. Out of 54 cases, 3 cases (5.6%) responded to 203 injections, 43 cases (79.6%) to 4 - 7 injections and one case to 8 injections. On an average, 4 injections were needed for a cure, cure rate then being 87

TABLE 2
Nature of lesions

Type of lesion	Number of cases	Percentage
Single lesion	30	55.5
Multiple lesion	24	44.5
Total	54	100.0

per cent. There were 4 failures (7.5%) and 3 defaulters (5.5%) Table 4. Failure of the treatment was mainly with respect to lesions of the face where even injections upto 12 in some cases did not give any observable response.

TABLE 3
Distribution of lesions

Site	Number of cases	Percentage
Face	16	29.6
Upper limbs	24	44.4
Lower limbs	9	16.6
Neck	1	1.9
Trunk and Abdomen	4	7.5
Total	54	100.0

TABLE 4
Results with Berberine hydrochloride treatment

Result	Number of cases	Percentage
Cure 2 - 3 injections (2 - 3 weeks)	3	5.6
Cure 4 - 7 injections (4 - 7 weeks)	43	79.6
Cure 8 - 12 injections (8 - 12 weeks)	1	1.8
No follow up	3	5.5
Failure	4	7.5
Total	54	100.0

Any of the following criteria was used for cure :

- (i) Complete disappearance of infiltration, pain and redness.
- (ii) Closure of and drying up of the discharging lesions:
- (iii) Complete healing resulting in smooth scar.

Discussion

Protozoa of the genus Leishmania causes three distinctive diseases with skin manifestations in each namely; Kala-azar, oriental sore, and muco-cutaneous leishmaniasis. Oriental sore (cutaneous leishmaniasis) is caused by L.T., which is transmitted to man by a sandfly of

the genus *Phlebotomus* usually from some animal reservoir of infection. Oriental sore is a specific granuloma of the skin which usually breaks down to form a large indolent ulcer. The lesions are more often multiple than single and are usually present in the exposed parts of the body. The two subtypes of cutaneous leishmaniasis viz. a zoonotic form and anthroponotic form giving rise to 'wet' and 'dry' type of the disease respectively are well recognised in the U. S. S. R. The 'wet' form is reported to be caused by *L. T. major* and 'dry' form by *L. T. minor*. The former is chiefly found in various species of the rodents while the latter is known to occur in humans and to some degree in dogs⁸. The other important variety is the recidivans (Chronic lupoid) variety.

A number of other clinical forms have been described e. g. rhinophymal type, furunculoid variety, nodular variety, extensive infiltrative plaque type, verrucous type and vegetating type. In India, the first evidence of the existence of a zoonotic infection based on clino-epidemiological analysis of cases was collected in 1973 during the course of investigation of an outbreak of cutaneous leishmaniasis in Bikaner⁸. Cases of oriental sore are still prevalent in Bikaner. All the clinical forms of the disease have been observed. The use of intra-lesional berberine acid sulphate had been the popular method of treatment here. Since it is not available now another salt of berberine i. e. berberine hydrochloride in the same strength as berberine sulphate (2%) was tried. With this cure rate of 87% was observed which is consi-

dered quite satisfactory. Average duration of treatment was about 4 weeks (4 injections). The treatment of face lesions posed a problem. The salt had its drawback in the sense that it precipitated in cold and had to be warmed a little prior to its administration. In spite of this drawback, the satisfactory therapeutics results with this drug should encourage its use more widely.

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References :

1. Sabir M and Bhide NK : *Ind Jour Physiol and Pharmacol* 15:111-132, 1971.
2. Gupta VC and Kahli BS : *General Pharmacology of umbellatine and its use in the treatment of oriental sore. Ind Jour Med Res* 32 : 53, 1944.
3. Jolly G : *Treatment of Oriental sore. Ind Med Gaz* 46 : 466, 1911.
4. Varma RL : *Berberine sulphate in Oriental sore. Ind Med Gaz* 62 : 84, 1927.
5. Das Gupta BM and Dikshit BB : *Berberine in the treatment of Oriental sore Ind Med Gaz* 64 : 67-70, 1929.
6. Laxmi Devi : *Berberine sulphate in Oriental sore. Ind Med Gaz.* 64 : 139-140, 1929.
7. Lysenko A : *Distribution of Leishmaniasis in the old world. Bull WHO* 44 : 515, 1971.
8. Sharma MID, Suri JC, Kalra NL and Mohan K : *Studies on cutaneous leishmaniasis in India. Ind J Comm Dis* 5 : 149-153, 1973.