

Thyroid Function in Leprosy as Determined by Uptake of Radioactive Iodine¹

V. N. Sehgal and A. K. Basu²

In a case of advanced lepromatous leprosy the distribution of bacilli may be extensive and widespread, so much so as to involve any organ of the body. The clinical picture that may emerge ultimately, i.e., nonpitting edema of the face, hands and feet, dryness of the skin, absence of perspiration, dryness and loss of hair, brittleness and atrophy of the nails, paresthesias, and changes in plasma proteins, simulates the picture of a well developed case of hypothyroidism. It was considered worth while to know if the thyroid gland makes any contribution in the production of such symptoms and signs. As far as known very little work has been done on this particular problem (4). Ross (2) and Ross and Petrie (3) investigated thyroid function in leprosy by studying basal metabolic rates and protein-bound iodine in unselected patients, without significant findings.

MATERIALS AND METHODS

Seventeen cases of well advanced lepromatous leprosy, all under treatment with diaminodiphenylsulfone, were included in the study. All were drawn from the leprosarium in Varanasi.

A tracer dose of radioactive iodine (I^{131}), supplied by the Atomic Energy Establishment Trombay, in the form of sodium iodine in capsule, was given orally to the

patients after overnight fast, in dosage ranging from 15 to 25 microcuries. Measurements of uptake were carried out at the first hour, and again 24 hours after the tracer dose. The equipment used for the purpose consisted of a scintillation probe with a sodium iodide crystal and scaler counter unit.

The values obtained were checked further by calculating the conversion ratio (C.R.), i.e., the ratio between plasma I^{131} and plasma protein-bound I^{131} at 24 hours.

Observations and results. Table 1 shows the uptake of I^{131} in 24 hours and the conversion ratios of 17 cases of lepromatous leprosy. Fifteen of the 17 patients showed values within the normal range (20-60%), while two (Nos. 6 and 7) revealed values above normal. In the light of the results obtained by both methods in these subjects, the thyroid function was considered to be generally normal.

DISCUSSION

Earlier studies on necropsy material from leprosy subjects by Powell and Swan (1) revealed few changes in the thyroid gland except for occasional deposition of amyloid within the walls of the small arterioles. The study here reported, although with different parameters, has shown that in 15 of 17 subjects the uptake of radioactive iodine and the conversion ratios were within the normal (euthyroid) range. Two subjects showed higher values, although clinically these patients did not present signs and symptoms suggestive of a hyperfunctioning thyroid. The state noted could be due, however, to iodine "hunger" of the thyroid, as this region is a

¹Received for publication 15 August 1966.

²V. N. Sehgal, M.D., Lecturer in Dermatology and A. K. Basu, D. R. M., Lecturer in Nuclear Medicine, Sections of Dermatology and Nuclear Medicine, Department of Medicine, College of Medical Sciences, Banaras Hindu University, Varanasi 5, India.

TABLE 1. Uptake of I^{131} in lepromatous leprosy.

Case No.	Sex	Age (yrs.)	Uptake of I^{131} (24 hrs.) %	Conversion ratio %
1 (S.J.)	M	42	48.4	84.8*
2 (R.C.V.)	M	30	45.9	44.4
3 (R.S.)	M	30	42.0	21.4
4 (S.B.)	M	30	44.6	33.3
5 (R.L.)	M	35	47.2	56.6
6 (S.B.)	M	35	66.5	68.5
7 (S.P.)	M	35	77.1	69.6
8 (D.N.)	M	12	30.0	48.1
9 (K.D.)	F	23	58.6	57.1
10 (R.K.)	F	60	47.1	33.3
11 (A.L.)	M	50	31.1	35.2
12 (H.R.)	M	40	22.13	44.4
13 (K.L.)	M	32	26.24	30.0
14 (S.R.)	M	30	25.31	22.2
15 (E.S.)	M	20	41.7	66.2
16 (B.S.)	M	45	44.26	25.0
17 (S.N S.)	M	60	53.43	33.3

*There was a delay in blood sample collection in this case, thus the higher value.

pocket of endemic goiter. Thus our findings are in agreement with those of Ross (²) and Ross and Petrie (³). It is, therefore, unwarranted to explain the clinical features noted in leprosy on the basis of involvement of the thyroid gland alone, since it does not appear to take part in the disease process.

SUMMARY

Thyroid function as determined by uptake of radioactive iodine (I^{131}) was studied in 17 cases of well advanced lepromatous leprosy. With only two exceptions the values were found to be in the normal (euthyroid) range.

RESUMEN

La función tiroidea determinada por la absorción de yodo radioactivo (I^{131}) se estudió en 17 casos de lepra lepromatosa en estado avanzado. Con solo dos excepciones los valores encontrados estaban en el rango de lo normal (euthyroid).

RÉSUMÉ

Dans 17 cas de lèpre lépromateuse fort avancée, on a étudié la fonction thyroïdienne telle qu'elle est mesurée par le chargement (uptake) d'iode radioactif I^{131} . A part deux exceptions, les valeurs observées étaient dans les limites normales (euthyroidiennes).

Acknowledgments. We take this opportunity to thank Dr. K. N. Udupa, Principal, College of Medical Sciences, Dr. F. M. Narielwala, Professor of Medicine, and Dr. A. K. Bhattacharyya, Professor of Radiology, for valuable guidance and suggestions during this study. We are indebted to G. L. Gulliani for technical assistance.

REFERENCES

1. POWELL, C. S. and SWAN, L. L. Leprosy: Pathological changes observed in fifty consecutive necropsies. *American J. Path.* **31** (1955) 1131-1147.
2. ROSS, SR. H. Basal metabolism in leprosy. *Internat. J. Leprosy* **8** (1940) 53-59.
3. ROSS, SR. H. and PETRIE, I. M. Protein-bound iodine of the blood serum in leprosy. *Internat. J. Leprosy* **25** (1957) 122-125.
4. TOLENTINO, J. G. Approaches to clinical research. *Internat. J. Leprosy* **33** (1965) 763-766. (Part 2)