

Radioactive Iodine in the Study of Thyroid Physiology

VII. The Use of Radioactive Iodine Therapy in Graves' Disease*

SAUL HERTZ, M.D.

BOSTON, MASSACHUSETTS

ARTHUR ROBERTS, PH.D.

CAMBRIDGE, MASSACHUSETTS

INTRODUCTION

IN PREVIOUSLY published experiments of this series,^{1,2} radioactive iodine was used as an indicator in the study of animal and human thyroid physiology and iodine metabolism. Much of this preliminary work was done with a view to the discovery of the conditions under which radioactive iodine might be administered with maximum radiational effect in the pathologic thyroid of patients ill with Graves' disease. The present paper is a progress report on our early experiences (1941-1946) with such "internal irradiation" in the treatment of 29 cases of Graves' disease. It is, indeed, a three to five year follow-up report on these cases.

PROCEDURE

Patients were selected who had had no previous iodine treatment and who were judged clinically to have Graves' disease. The usual clinical tests were made and the patients were presented to the Thyroid Clinic of the Massachusetts General Hospital for discussion and determination of their suitability for this type of treatment. In each instance a dose of radioactive iodine, which had been made by the cyclotron at M.I.T. or by the Harvard University cyclotron, and separated chemically as sodium iodide, was then orally administered.

The samples of radioactive iodine used were obtained by deuteron bombardment of tellurium, and at the time of administration consisted of a mixture of different radioactive isotopes of iodine. Over 90 per cent of the activity at this time consisted of the 12.6 hour isotope I^{130} , and most

*From the Thyroid Clinic and Metabolism Laboratory of the Massachusetts General Hospital and the Radioactivity Center, Massachusetts Institute of Technology. This material was presented in part to the American Society for Clinical Investigation in May 1942. The work was aided by a grant from the John and Mary R. Markle Fund in the names of Professors J. H. Means and Robley D. Evans, and was accomplished by close cooperation of the Radioactivity Center of Massachusetts Institute of Technology, Cambridge, Massachusetts, and the members of the Medical staff of the Massachusetts General Hospital, Boston, Massachusetts.

This paper was presented to the American Association for the Study of Gout at its annual meeting on June 20, 1946, and was submitted in competition for the annual award of the Association for the Van Meter Prize. It received Honorable Mention as announced by the Chairman of the Meeting, Dr. John deJ. Remberton, President of the Association, at Chicago, Illinois.

Published in part in J.A.M.A., 131:86, May 11, 1946.

(33)

Woolf, L. M. J. 11-17-46