STUDIES OF PLASMA THYROID STIMULATING ACTIVITY IN THYROID DISORDERS

by

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Thesis submitted for the degree of
DOCTOR OF MEDICINE,

December 1965.

PREFACE

This project was carried out in the Department of Medicine, University of Adelaide, under the supervision of Professor B.S. Hetzel, to whom the author is grateful for much advice, discussion and encouragement.

The author is also indebted to the following: Dr. I.H. Buttfield who performed the field survey of endemic goitre in New Guinea; Mrs. L. Ratcliffe for expert technical assistance and for preparation of many of the figures; Mrs. M.L. Black, Miss H.A. Potter and Miss E.K. Mason for the performance of plasma PBI estimations and tri-iodo-thyronine resin uptake tests; Dr. E. Hackett of the Institute of Medical and Veterinary Science, Adelaide who performed the tests of thyroid auto-immunity; Dr. M.L. Wellby for the measurements of thyroidal ^{131}I uptake; and the Honorary Physicians of The Queen Elizabeth Hospital and Royal Adelaide Hospital for allowing access to their patients.

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SUMMARY

The thesis was introduced by an historical resume of the development of knowledge about the thyroid gland and its disorders. Then followed a section describing the control of thyroid function.

The second chapter described the methods used in the study both at the clinical and laboratory level. The symptoms, signs and results of diagnostic laboratory tests in the series of patients with thyrotoxicosis and myxoedema were compared to those in other published series.

The technical details of the bio-assay of thyroid stimulating activity by the method of McKenzie were described in the second section of Chapter II, together with the methods of statistical analysis of the results.

The third chapter reported studies of plasma thyroid stimulating activity in 34 cases of hypothyroidism. Elevated levels of T.S.H. were observed, and were shown to disappear following replacement therapy with thyroxine. The pattern of response to myxoedema plasma in the bio-assay was found to be variable. However all the patterns were shown to be due to pituitary T.S.H. A case of presumed pituitary hyposecretion of T.S.H. in advanced myxoedema was described. Studies were also carried out

in nine cases of cretinism.

The fourth chapter reported studies of endemic goitre in natives from the Huon Peninsula of New Guinea. It was shown that this particular endemic was due to iodine deficiency and elevated levels of plasma T.S.H. were found in goitrous natives. Lower levels of plasma T.S.H. were found in coastal natives. It is believed that this is the first direct evidence confirming the role of T.S.H. in the mechanism of endemic goitre. Evidence was presented to show that the goitrous gland is less efficient in thyroid hormone production (as compared to the thyroid which is not so enlarged) and therefore is associated with higher circulating T.S.H. levels.

Studies in nine cases of acromegaly, four cases of Cushing's syndrome due to adrenal cortical hyperplasia, and seven cases of hypopituitarism, were reported in Chapter IV. Negative results were obtained in all except four acromegalics. The significance of this finding was discussed. The value of the T.S.H. assay in assisting the differential diagnosis between hypothyroid and hypopituitary dwarfism was demonstrated.

The fifth chapter reported the clinical findings in hyperthyroidism in relation to L.A.T.S. The presence of visible goitre, recurrence of hyperthyroidism

and exophthalmos were all shown to be associated with L.A.T.S., and the highest titres were found in cases with pretibial myxoedema. Studies in three cases of neonatal hyperthyroidism indicate the evanescent nature of this syndrome associated with the transient presence of L.A.T.S. in the infant's blood. All these observations indicate the importance of L.A.T.S. in the pathogenesis of thyrotoxicosis and probably also exophthalmos.

The sixth chapter reported studies on the basic nature of L.A.T.S. It was shown that antiserum to bovine T.S.H. neutralizes standard T.S.H. and myxoedema plasma T.S.H., but in lower dosage may convert the pattern of activity to long acting resembling L.A.T.S. The antiserum was shown not to inactivate L.A.T.S.

Antiserum to human 7S gamma globulin was shown to neutralize L.A.T.S. but the effect on the T.S.H. in myxoedema plasma was variable.

Several experiments were reported where the pattern of activity of T.S.H. was made to resemble that from L.A.T.S. - suggesting that L.A.T.S. may be modified T.S.H.