PROGRESS IN ENDOCRINOLOGY 1988

Volume 2

Proceedings of the 8th International Congress of Endocrinology, Kyoto, 17–23 July 1988

Editors:
Hiroo Imura
Kyoto University School of Medicine
Kyoto, Japan

Kazuo Shizume
Tokyo Women's Medical College
Tokyo, Japan

Sho Yoshida
Chiba University School of Medicine
Chiba, Japan

1988

EXCERPTA MEDICA, Amsterdam – New York – Oxford

International Congress Series No. 799
ISBN 0 444 81041 2

Published by:
Elsevier Science Publishers B.V.
(Biomedical Division)
P.O. Box 211
1000 AE Amsterdam
The Netherlands

Sole distributors for the USA and Canada:
Elsevier Science Publishing Company Inc.
52 Vanderbilt Avenue
New York, NY 10017
USA

Library of Congress Cataloging in Publication Data:

International Congress of Endocrinology (8th : 1988 :
Kyoto, Japan)
Progress in endocrinology 1988.

(International congress series ; no. 799)
Includes indexes.
1. Endocrinology--Congresses. I. Imura, Hiroo.
II. Shizume, Kazuo. III. Yoshida, Shō. IV. Title.
V. Series. [DNLM: 1. Endocrinology--congresses.
W3 EX89 no. 799 / WK 100 I61 1988p]
RC648.A1I57 1988 616.4 88-31041
ISBN 0-444-81041-2 (U.S.)

Printed in The Netherlands

Contents

*The contributions marked with an * were received late and have been included at the end of this volume.*

Regulation of growth hormone secretion and disorders of growth

Paracrine control of adrenocortical functions

Comparative ontogeny of gonadal development

Corticotropin releasing factor/Pro-opiomelanocortin

Regulation of bone cell growth and function

Clinical aspects of growth hormone-insulin-like growth factor interaction

Second messengers

Signal transduction

The physiology of gonadotropin action

Regulation of thyroid growth

Endocrine aspects of hypertension

Opioid peptides

Cell-cell interactions in testicular tissue

Neurohypophysial hormones

Tissue renin-angiotensin systems

Gastrointestinal hormones

Endocrine aspects of osteoporosis

Vasoactive hormones

Steroid binding proteins and tissue availability of hormones

Advances in thyroid pathology

Endocrine neoplasia syndromes

Prolactin

MEET THE PROFESSOR

Progress in endocrinology 1988. H. Imura et al, editors.

NON-TOXIC GOITER

PETER C. SCRIBA

Klinik für Innere Medizin, Medical University of Lübeck, Ratzeburger Allee 160, D 2400 Lübeck (FRG)

ETIOLOGY

Obviously the etiology of non-toxic goiter is heterogeneous. While iodine deficiency is the predominant cause (1, 8), there are other reasons for sporadic and endemic goiter, as goitrogens from water and food supplies (2, 5), goitrogenic drugs, and inborn defects of thyroid hormone synthesis and metabolism. In addition, thyroid growth stimulating immunoglobulin may play a role, though some of the observations could have been due to contamination (4) e. g. with EGF (epidermal growth factor).

EPIDEMIOLOGY

Non-toxic goiter remains a major health problem (1), wherever iodine deficiency prevails as an endemic problem. Recent reports show the worldwide distribution of iodine deficiency, with several hundred million people living at the risk of goiter (8). Non-toxic goiter, however, represents only the most obvious example of the whole spectrum of iodine deficiency disorders, which includes retarded growth, mental disability etc. In general it may be said, that most epidemiological data are poor and do not comply with recommendations by PAHO (14). For instance, definition by stages is not regularly applied in studies published.

A better quantization of thyroid size can be achieved by ultrasonography even in epidemiological field studies (7, 16). This procedure has an average error of 10 to 15 % and permitted to demonstrate e. g. the frequency distribution of thyroid volume in Sweden, where iodine intake suffices, as compared to the Federal Republic of Germany, where almost half of the children have enlarged thyroids (7). In addition, ultrasound patterns of the thyroid were abnormal in only 3.6 % of the Swedish adult population as compared to 16 % in Germany.

IODINE PROPHYLAXIS

The eradication of iodine deficiency carries important effects on the quality of life, the productivity and educability of those affected as summarized by the ICCIDD (8). The global prevention of this condition has been advocated by the UN and the WHO. Once installed, the maintenance of iodine prophylactic programs has to be continuously monitored.

The ETA has reported (14), that the sufficient iodine intake in Northern European countries is largely inadvertently, and for instance due to the use of iodophors as desinfectants. Only few countries like Czechoslovakia and Switzerland use adequately iodized salt. In other parts of the world, iodized oil given either intramuscularly or orally is used for prophylaxis (1, 8). We have experience with some 12 000 injections of iodized oil in Tanzania, and could not confirm the increase of thyroid antibodies as claimed by others (16).

DIAGNOSIS IN THE INDIVIDUAL : NON-TOXIC GOITER

Non-toxic goiter remains a condition, which can only be diagnosed after exclusion of other thyroid disorders. Even in countries with a well funded health system, we have to define a rational diagnostic strategy (13) in order to limit the ever increasing expenses. In Table I, the simple determination of the

TABLE I

Exclusion of	Rational procedure +)
Hypothyroidism	basal TSH (MCA)
Thyrotoxicosis	basal TSH (MCA)
Autonomy	
single nodule	Scintigraphy
multifocal/disseminated	Quantization, Suppression
Thyroiditis	
chronic	Autoantibodies
acute/subacute	ESR etc.
Nodular alterations incl. Thyroid Malignancy	Ultrasonography FNA - Cytology

+) NB: Sometimes more, sometimes less may be needed

German Society for Endocrinology - Thyroid Section (13)

basal TSH with a highly sensitive radioimmunoassay is recommended as the first and sole procedure to exclude hypothyroidism and/or thyrotoxicosis. Notably, non-toxic goiter is defined as a condition where the patient is euthyroid and free from thyroiditis or thyroid malignancy. Autonomy is excluded by scintigraphy. Sonography has become the dominating first hand procedure to diagnose thyroiditis and thyroid malignancy and is used for controlled fine needle aspiration (FNA) cytology.

THERAPY

As generally agreed, non-toxic goiter may be treated by surgery. There is also a place for the application of radioiodine (3) in the treatment of non-toxic goiter; certainly this kind of treatment represents a privilege of the somewhat luxurious medicine of countries with a high living standard. Patients aged 60 or older may profit most, though the reduction in thyroid size is only limited. Few if any of these patients need a thyroid hormone replacement therapy after radioiodine.

There is currently a controversy going on, whether to treat young non-toxic goiter patients with thyroxine or iodine (9). As a theoretical background, the debate continues, whether TSH is a direct growth stimulator of the thyroid. If this would be correct, TSH suppressive thyroxine doses should be the logical therapy for non-toxic goiter. Other authors consider growth factors (EGF) and the iodine content of the thyroid cell itself as important for proliferation and hyperplasia of the thyroid gland (15).

Obviously, there are non-toxic goiters with firm nodules which do not respond to medication (6). The optimal patient for medical treatment would rather be a young patient up to 25 years old with a diffuse goiter of recent onset (11). More than 80 % of these patients respond favorably to the treatment. Using sonographic volumetry as an ideal means of controlling the effect, it was shown, that size reductions by 30 - 35 % are to be expected, when thyroxine is given for a period of 3 to 6 months (12). Thereafter, no further decrease of thyroid size can be achieved.

Stopping thyroxine will lead to goiter relapse within a few weeks. Surprisingly, the relapse is slower, when iodine is applied to reduce goiter (9, 12). After successful medical therapy, one has to enter a mean of prophylaxis to prevent recurrence

of goiter by either administering half the amount of the initial thyroxine dose or by 100 to 200 µg iodine/d. What was said is true for endemic goiter in an iodine deficiency area. There are no convincing data on conservative therapy of goiters due to other causes.

As convincingly shown in children (10), treatment with iodine alone can also decrease goiter size by 30 - 40 %. The recommendation to treat adults from 25 to 40 or even 50 years of age with iodine is less clear, waiting for further studies (9). Treatment of patients with goiter by either thyroxine of iodine is not very likely to be successful after approximately 40 to 50 years of age. In patients older than this, one has to consider either surgery or radioiodine or may in other cases just observe the patient.

REFERENCES

1. Dunn JT et al (eds) (1986) Towards the Eradication of Endemic Goiter, Cretinism and Iodine Deficiency. PAHO Scientific Publication No 502: 1-419
2. Ermans AM et al (eds) (1980) Role of Cassava in the Etiology of Endemic Goitre and Cretinism. IDRC, Ottawa, 1-182
3. Frey KW et al (1974) Münchn med Wschr 116: 1037-1042
4. Gärtner R et al(1987) Acta Endocrinologica Suppl 281:256-259
5. Gaitan E (1986) In: Medeiros-Neto G, Gaitan E (eds) Frontiers in Thyroidology. Plenum, New York, 19-25
6. Gharib H et al (1987) N Engl J Med 317:70-75
7. Gutekunst R et al (1986) Acta Endocrinologica 112:494-501
8. Hetzel BS et al (eds) (1987) The Prevention and Control of Iodine Deficiency Disorders. Elsevier, Amsterdam, 1-354
9. Hintze G, Köbberling J (1987) Klin Wschr 65:583-589
10. Leisner B et al (1985) Acta Endocrinologica 108:44-50
11. Meng W et al (1982) Z ges inn Med 37:540-542
12. Perrild H et al (1982) Acta Endocrinologica 100:382-387
13. Scriba PC et al (1985) Int Welt 8:50-57,78-86
14. Scriba PC et al (1985) The Lancet 1:1289-1293
15. Stübner D et al (1987) Acta Endocrinologica 116:537-548
16. Wächter W et al (1987) In: Hetzel, BS et al Loc cit (8)

INDEX OF AUTHORS

SUBJECT INDEX

Prepared by E.A. van der Veen, M.D., Amsterdam, The Netherlands