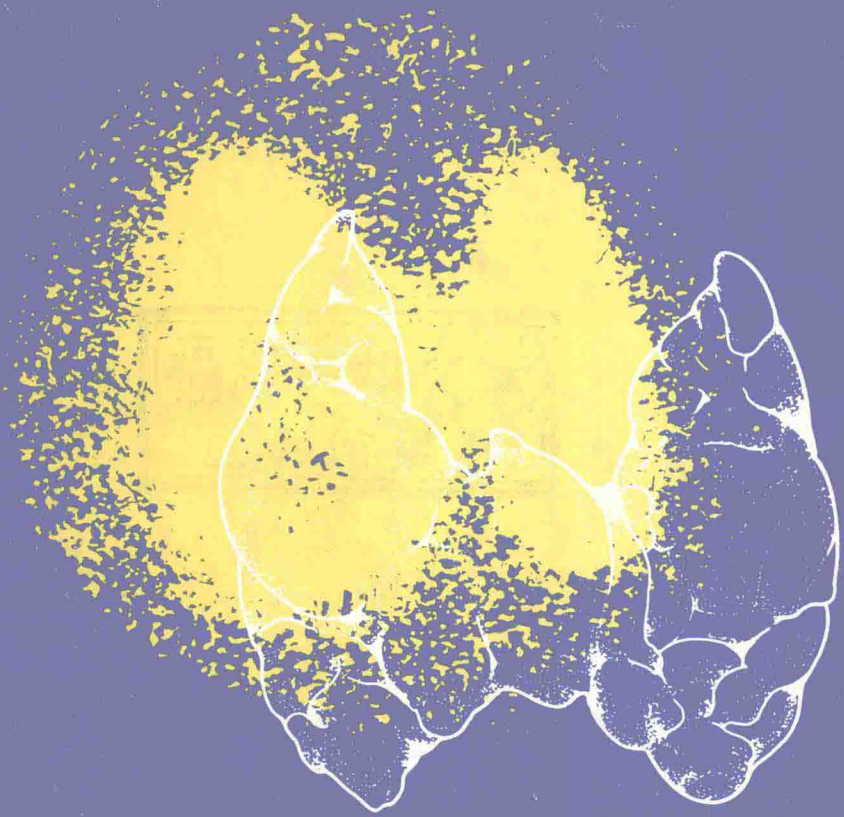
Controversies in Clinical Thyroidology

Edited by
Joel I. Hamburger
J. Martin Miller



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With 56 Figures

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Controversies in Clinical Thyroidology

Preface

"Man's natural instinct, in fact, is never toward what is sound and true. It is toward what is specious and false . . .

The ideas that conquer the race most rapidly and arouse the wildest enthusiasm and are held most tenaciously are precisely the ideas that are most insane. This has been true since the first 'advanced' gorilla put on underwear, cultivated a frown and began his first lecture tour, . . ."

H. L. Mencken, from
Meditation On Meditation
in the Smart Set, June, 1920
pp 45–46

In our opinion there is no field of clinical medicine in such a state of dynamic disequilibrium as clinical thyroidology. Thyroid diseases are very common. The moderately complex but easily understandable physiological interrelationships between the thyroid, pituitary and hypothalamus have provided stimuli for the application of modern technology in the development of an array of diagnostic procedures. Although therapeutic methods have been more stable, and recent advances more limited, their application by physicians representing different disciplines has provided an ample basis for the expression of differing viewpoints.

Unfortunately there are few opportunities for in-depth exploration of different attitudes and experience relevant to issues of current interest. The review process employed by medical journals often seems to stifle the expression of controversial viewpoints. The discussions afforded by "Letters to the Editor" are limited and suffer from an interval of several months between the original presentation and the controversy it provoked. At

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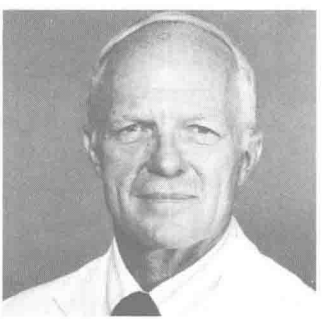

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medical meetings discussions almost invariably are closed for lack of time before the issues can be resolved. Finally, it is seldom possible to bring together in one location at the same time experts from around the world.

The objective of this volume is to provide a forum for thorough discussions of controversial issues which the editors believe will be of interest to physicians who care for thyroid patients. The editors and their colleagues have provided the framework for each discussion by listing the issues, reporting their experience and offering their opinions, based upon that experience. The editors have been in close contact and have worked together on projects for the past twenty years. During this time they have been engaged primarily in patient care. Therefore they believe they know the answers. Curiously, however, they do not always agree with each other's answers. Be that as it may, after the initial presentations we come to the heart of the volume, the invited commentaries from authorities from around the world. These physicians were asked to present their experience and opinion on the issues because of their demonstrated interest and expertise, and previous contributions to the thyroid literature. Special effort has been made to obtain input from physicians holding opinions contrary to those of the editors. The contributors were given the opportunity to review the material prepared by the editors so that they could focus their remarks on the issues which were raised. They have been given free rein to express themselves at whatever length they deemed appropriate, and their remarks, in agreement or otherwise, have been printed as submitted. Although the inclusion of supporting data has been encouraged, since the contributors are all physicians who have published papers on the subject, we were mostly interested in their opinions.

The final summations by the editors may be of assistance to some, but may be ignored by others who prefer to arrive at their own conclusions. Regardless of this, we hope that the reader will find that this form of presentation provides an easy way to reach decisions on controversial issues in clinical thyroidology.

Before closing these remarks we feel obliged to beg the indulgence of the many outstanding authorities who were not invited to participate. We sincerely hope that they will submit material for consideration for the next volume. We plan to produce new editions on different issues at about two year intervals. Such submissions may be of two types:

1. A suggestion of a controversial issue which a physician would like to have presented in the format of this volume.

2. An in-depth presentation of experience on an issue which can be discussed by other authorities.

Instructions for authors are included at the end of the book.

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Contents

Chapter 1

Is Thyroid Imaging an Overutilized Diagnostic Procedure?

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Michael Garcia, M.D.
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INTRODUCTION

The technique for thyroid imaging has improved dramatically over the past 30 years so that modern images are remarkably clear and may provide striking pictures of abnormal thyroid structure. Also the patient radiation burden has been reduced by a factor of 100. However, advanced technology carries a correspondingly advanced price tag. As physicians are being held increasingly accountable for the rising cost of health care it becomes incumbent upon us to consider the cost effectiveness of thyroid imaging in relation to the indications for its use. This issue is particularly pertinent now because of improvement in the sensitivity and reliability of in vitro thyroid function testing. Also, needle biopsy is gaining favor as the procedure of choice for the diagnosis of the thyroid nodule.[1]

Two recent experiences provoked consideration of this issue. First, at a local medical meeting a nuclear medicine specialist presented a family with Hashimoto's thyroiditis. All members had been imaged. When asked why imaging was ordered he responded: "It's part of the routine workup." Second, a 26-year-old woman came to our clinic for a second opinion to determine whether she needed an annual thyroid scan. One had been done by her physician every year since age 16. The tracer employed was ^{131}I.

It is the objective of this report to assess retrospectively the medical value of thyroid images performed on 2000 consecutive patients. Half the images were performed in a private fee-for-service referral clinic, Northland Thyroid Laboratory (NTL) in which imaging was performed (with few exceptions) only when

considered necessary by the staff endocrinologists. The other half were performed in a large multispecialty group practice, Henry Ford Hospital (HFH), in which images were performed whenever ordered by the attending salaried physicians, in the majority of instances not endocrinologists. The experiences of the two clinics will be compared in an effort at addressing the following controversial issues:

(1) Is thyroid imaging overutilized?

(2) If so, what are the relative contributions of economic self-interest and inexperience to this overutilization?

(3) What are the principal indications for thyroid imaging at this time, and for which of these indications are the data obtained likely to be of importance in the management of the patient's problem?

EXPERIENCE OF THE TWO CLINICS: INDICATIONS FOR IMAGING

Each record was assessed to determine the reason for imaging and the final diagnosis. After the records were reviewed the authors evaluated each indication in terms of its importance to patient management and with respect to cost-benefit considerations. Agreement was reached on the following grading scale:

Necessity Category I: Justified

Necessity Category II: Limited value

Necessity Category III: Not justified

The bases for these judgments will be presented, and the performance of the two clinics in terms of cost effectiveness will be compared.

Table 1-1 presents the indications for imaging in the two institutions and the number of images performed for each. The necessity category is also shown, as is the percentage (in parentheses) of images performed for necessity category III indications.

Discrete Solitary or Dominant Thyroid Nodules

Twenty-six percent of the images were for the evaluation of a solitary or discrete dominant nodule. In the NTL series 22% of these lesions were autonomously functioning thyroid nodules (AFTN). This was the case only for 10% of the HFH series, but HFH patients did not in all instances have the necessary confirmatory studies performed. AFTN diagnoses were of value in excluding thyroid cancer. A finding of reduced nodular function was less helpful, because most of these nodules are benign. Nevertheless the information had limited usefulness for two reasons. First, for those patients who have surgery for what proves to be carcinoma, it is helpful to know the preoperative relationship of the nodule to the remaining thyroid tissue and other anatomic structures of the neck. These data may be critical for comparison with postoperative imaging data. Second, for many patients who do not have surgical treatment, thyroid hormone will be given. Demonstra-

Table 1-1. Indications for thyroid imaging at Northland Thyroid Laboratory and Henry Ford Hospital, and the necessity category assigned to each.

Indications	Northland Thyroid Laboratory	Henry Ford Hospital	Necessity category
1. Discrete solitary or dominant thyroid nodule	215	306	I
2. To assess function of thyroid remnants after thyroidectomy for benign disease	34	40	I
3. Cancer follow-up	17	39	I
4. Post-TSH in assessment of further need for exogenous thyroid hormone	125	0	II
5. Suspected subacute thyroiditis	64	21	II
6. Suspected thyroglossal duct cyst, or to determine whether there is thyroid in the normal position when a midline mass consistent with a thyroglossal duct cyst is found	1	21	II
7. To determine if retromanubrial mass is thyroid	0	42	II
8. Assessment of uniformity of function in diffuse or multinodular goiter, no dominant nodule	282 (28%)	234 (23%)	III
9. Graves' disease with goiter	99 (10%)	79 (8%)	III
10. To assess function of thyroid remnants after radioactive iodine therapy	72 (7%)	29 (3%)	III
11. Searching for impalpable nodules (history radiation therapy)	41 (4%)	71 (7%)	III
12. To assess thyroid function in nongoitrous individuals	36 (4%)	81 (8%)	III
13. To assess thyroid size	9 (1%)	18 (2%)	III
14. Miscellaneous	5	19	
Total	1000	1000	

tion of reduced nodular function excludes autonomous function, which would contraindicate the use of thyroid hormone. We do not agree that needle biopsy makes imaging unnecessary,[2] nor that all nodules should be biopsied. Because imaging of thyroid nodules may exclude a diagnosis of cancer for 10–20% of patients, and provides information of limited value for the rest, this indication was graded category I.

· Following Thyroidectomy for Benign Disease

Four percent of the images were performed to assess thyroid tissue remaining after thyroidectomy for benign disease. Many of these remnants had undergone nodular hyperplasia because of failure to administer thyroid hormone postopera-

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