

HOSPITAL PHYSICIAN®

ENDOCRINOLOGY BOARD REVIEW MANUAL

STATEMENT OF EDITORIAL PURPOSE

The *Hospital Physician Endocrinology Board Review Manual* is a study guide for fellows and practicing physicians preparing for board examinations in endocrinology. Each manual reviews a topic essential to the current practice of endocrinology.

PUBLISHING STAFF

PRESIDENT, GROUP PUBLISHER
Bruce M. White

EDITORIAL DIRECTOR
Debra Dreger

EDITOR
Tricia Faggioli

ASSISTANT EDITOR
Farrawh Charles

EXECUTIVE VICE PRESIDENT
Barbara T. White

EXECUTIVE DIRECTOR OF OPERATIONS
Jean M. Gaul

PRODUCTION DIRECTOR
Suzanne S. Banish

PRODUCTION ASSOCIATE
Kathryn K. Johnson

ADVERTISING/PROJECT DIRECTOR
Patricia Payne Castle

SALES & MARKETING MANAGER
Deborah D. Chavis

NOTE FROM THE PUBLISHER:

This publication has been developed without involvement of or review by the American Board of Internal Medicine.



Endorsed by the
Association for Hospital
Medical Education

Clinically Inapparent Adrenal Masses

Editor:

Stephen A. Brietzke, MD, FACP, FACE

Associate Professor of Clinical Medicine, Division of Endocrinology, Department of Medicine, University of Missouri–Columbia, Columbia, MO

Contributor:

Paul M. Copeland, MD

Assistant Clinical Professor of Medicine, Harvard Medical School, Boston, MA; Chief of Endocrinology, North Shore Medical Center, Salem, MA

Table of Contents

Introduction	2
Causes	2
Approach to Evaluation	3
Management	8
Summary	10
References	10

Cover Illustration by Christine Armstrong

Copyright 2008 Turner White Communications, Inc., Strafford Avenue, Suite 220, Wayne, PA 19087-3391, www.turner-white.com. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, electronic, photocopying, recording, or otherwise, without the prior written permission of Turner White Communications. The preparation and distribution of this publication are supported by sponsorship subject to written agreements that stipulate and ensure the editorial independence of Turner White Communications. Turner White Communications retains full control over the design and production of all published materials, including selection of topics and preparation of editorial content. The authors are solely responsible for substantive content. Statements expressed reflect the views of the authors and not necessarily the opinions or policies of Turner White Communications. Turner White Communications accepts no responsibility for statements made by authors and will not be liable for any errors of omission or inaccuracies. Information contained within this publication should not be used as a substitute for clinical judgment.

Clinically Inapparent Adrenal Masses

Paul M. Copeland, MD

INTRODUCTION

Clinically inapparent adrenal masses are incidentally discovered on approximately 2% to 3% of imaging studies performed for reasons other than suspicion of adrenal disease. Most adrenal “incidentalomas” are benign and do not produce a hormonal syndrome. However, the appropriate evaluation and management of these masses is challenging. It is important to avoid unnecessary testing, with its attendant costs and risks to the patient. At the same time, determining which masses represent functional adrenal tumors or malignancies is critical. Careful diagnostic evaluation is necessary to identify the likely pathologic entity so that appropriate treatment can be provided.

This manual begins with a review of the possible causes and approach to evaluation of a clinically inapparent adrenal mass. The discussion continues with a review of the indications and procedures for surgical management and appropriate follow-up for patients with adrenal incidentalomas.

CAUSES

Potential causes of adrenal masses are listed in **Table 1**. Clinically important causes include adrenocortical carcinoma, pheochromocytoma, aldosteronoma, and cortisol-hypersecreting adenoma.

ADRENAL TUMORS

The most common adrenal mass is a benign adrenal adenoma. In autopsy series, adrenal adenomas have a prevalence of 1.4% to 8.7%; the higher prevalence figures included adenomas as small as 0.2 cm.¹

Regardless of size, adenomas may be hyperfunctioning. Using stringent criteria, dexamethasone suppression testing suggests that 2% to 12% of adrenal incidentalomas hypersecrete cortisol at presentation. Among adenomas initially considered nonfunctioning, approximately 1% to 2% will come to manifest cortisol hypersecretion if followed for up to 3 year; almost all of the adenomas that subsequently hypersecrete cortisol

are 3 cm or larger in diameter at the initial evaluation.² Adenomas that hypersecrete mineralocorticoid (eg, aldosterone) comprise only about 1% to 3% of clinically unsuspected adrenal masses. Pheochromocytoma (a catecholamine-secreting tumor) has generally been found in 1.5% to 9% of incidentalomas but accounted for 23% of 210 incidentalomas in a Japanese series.³

Adrenocortical carcinoma is rare based on data from tumor registries (annual incidence of 1 per 600,000 in the United States), yet it has been reported to represent approximately 5% of incidentalomas. Much of these data come from surgical series where there may be an ascertainment bias. Also, the higher prevalence of adrenocortical carcinoma among incidentalomas may reflect the slow growth of many of these cancers. While there is no absolute minimal size for adrenocortical carcinoma, all of those reported have had a diameter greater than 1 cm. Although the median 5-year survival for patients with symptomatic adrenocortical carcinoma is only 35%,⁴ it may take several years before symptoms manifest. Cancers that have been inadvertently followed rather than removed have been observed to only double in diameter during a 7-year interval.⁵

METASTASES AND PSEUDOADRENAL MASSES

Malignancies commonly metastasize to the adrenal gland. The most common primary sites are the lung, breast, skin (melanoma), stomach, kidney, pancreas, and colon. However, even in patients with known malignancies, almost half of adrenal incidentalomas are benign adenomas.

Pseudoadrenal masses also need to be considered. These masses may appear to be within the adrenal gland on a computed tomography (CT) scan, but they actually arise in other organs such as the kidney, pancreas, spleen, stomach, liver, lymph nodes, or blood vessels.

SYSTEMIC AND INHERITED DISORDERS

Systemic illnesses may manifest in the adrenal gland. Granulomas occur in tuberculosis and histoplasmosis. Adrenal cysts are seen in cryptococcosis, echinococcosis, and paragonimiasis. The cysts of paragonimiasis can be filled with creamy material and appear solid on