

Addison Disease: Early Detection and Treatment Principles

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Primary adrenal insufficiency, or Addison disease, has many causes, the most common of which is autoimmune adrenalitis. Autoimmune adrenalitis results from destruction of the adrenal cortex, which leads to deficiencies in glucocorticoids, mineralocorticoids, and adrenal androgens. In the United States and Western Europe, the estimated prevalence of Addison disease is one in 20,000 persons; therefore, a high clinical suspicion is needed to avoid misdiagnosing a life-threatening adrenal crisis (i.e., shock, hypotension, and volume depletion). The clinical manifestations before an adrenal crisis are subtle and can include hyperpigmentation, fatigue, anorexia, orthostasis, nausea, muscle and joint pain, and salt craving. Cortisol levels decrease and adrenocorticotropic hormone levels increase. When clinically suspected, patients should undergo a cosyntropin stimulation test to confirm the diagnosis. Treatment of primary adrenal insufficiency requires replacement of mineralocorticoids and glucocorticoids. During times of stress (e.g., illness, invasive surgical procedures), stress-dose glucocorticoids are required because destruction of the adrenal glands prevents an adequate physiologic response. Management of primary adrenal insufficiency or autoimmune adrenalitis requires vigilance for concomitant autoimmune diseases; up to 50% of patients develop another autoimmune disorder during their lifetime. (*Am Fam Physician*. 2014;89(7):563-568. Copyright © 2014 American Academy of Family Physicians.)

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Author disclosures: No relevant financial affiliations.

► Patient information: A handout on this topic is available at <http://familydoctor.org/familydoctor/en/diseases-conditions/addison-disease.html>.

More than 150 years ago, Thomas Addison described a group of patients with anemia and diseased adrenal glands at autopsy, a condition now known as primary adrenal insufficiency. Autoimmune adrenalitis is the most common cause of primary adrenal insufficiency, or Addison disease, in the United States. Less common causes include infection, hemorrhage, metastatic cancer, medication use, and adrenoleukodystrophy.

Autoimmune adrenalitis is a disorder in which the adrenal cortex is destroyed, resulting in the loss of mineralocorticoid, glucocorticoid, and adrenal androgen hormone production. Addison disease can be part of the autoimmune polyglandular syndromes (type 1 and 2), or it may present as an isolated disorder.¹ This article focuses on the diagnosis and treatment of Addison disease as an isolated disorder, with a focus on the pathophysiology and treatment considerations of autoimmune adrenalitis.

Pathogenesis

Autoimmune adrenalitis can be divided into stages of progression^{2,3} (Table 1). As the

disease develops, individuals lose adrenocortical function over a period of years. In the first three stages, the human leukocyte antigen genes confer genetic risk; an unknown precipitating event initiates antiadrenal autoimmunity; and 21-hydroxylase antibodies are produced, which predict future disease. The production of these antibodies can precede symptom onset by years to decades, and they are present in more than 90% of recent-onset cases.^{2,4-7} In the fourth stage, overt adrenal insufficiency develops. One of the first metabolic abnormalities to occur is an increase in plasma renin level, followed by the sequential development of other abnormalities, including a decreased response to adrenocorticotropic hormone (ACTH) stimulation in the fifth stage. If symptoms of adrenal insufficiency are present but go undiagnosed, an Addisonian crisis can occur.

Clinical Diagnosis

Because the estimated prevalence of Addison disease is one in 20,000 persons in the United States and Western Europe, a high clinical suspicion is needed to avoid misdiagnosing a life-threatening adrenal crisis.⁸ Signs and symptoms can be subtle and nonspecific.

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Swanson's Family Medicine Review E-Book Alfred F. Tallia, Joseph E. Scherger, Nancy Dickey, 2016-06-15 Includes nearly 2 500 case based questions and answer rationales newly updated to reflect the most current developments in practice Chapter Summaries offer a quick review of the concepts great for last minute exam preparation Open ended Clinical Case Management Problems in each chapter provide additional opportunities for articulating your understanding of key topics Features the most current information on concussion management palliative care pain management and more Allows you to earn up to 75 CME Credits online through Rutgers Robert Wood Johnson Medical School *Pathophysiology Made Incredibly Visual!* Lippincott, 2016-03-31 Know the how and why of common conditions and assess them accurately with the newly updated Pathophysiology Made Incredibly Visual 3rd Edition Fully illustrated in the popular Made Incredibly Visual style this essential guide offers easy to follow explanations for the causes and mechanisms of numerous common disorders listing symptoms and indications for each Use this as the perfect study guide for the NCLEX or certification exam to support class materials and to absorb the pathophysiology principles every nurse needs to know Absorb the expert wisdom and insights of this invaluable guide Walks you through the development stages of numerous diseases and disorders illustrating their cellular process symptoms and effects on tissue and organs Explains cell parts and their functions as well as cell division adaptation injury and stress and disease Hundreds of photos illustrations and diagrams explaining key concepts and providing clear direction on how to recognize common conditions Supports accurate diagnosis and treatment Common disorders for each major body system such as Cardiovascular Acute coronary syndromes aortic aneurysms cardiomyopathy Respiratory ARDS asthma chronic bronchitis lung cancer Neurologic Alzheimer s cerebral aneurysm migraine headaches Gastrointestinal Cholecystitis cirrhosis Crohn s disease Musculoskeletal Carpal tunnel syndrome herniated disk osteoarthritis Hematologic Anemia leukemia sickle cell disease Immune AIDS allergic rhinitis rheumatoid arthritis Endocrine Adrenal hypofunction diabetes mellitus metabolic syndrome Renal Acute renal failure acute tubular necrosis pyelonephritis Integumentary Acne burns pressure ulcers Reproductive Breast cervical ovarian and prostate cancer Special chapter features Vision Quest End of chapter quizzes in the form of puzzles riddles and multiple choice questions to help you retain vital information Risky business Risk factors to be aware of while treating each condition How it happens The physiological process that creates a particular condition What to look for A list of symptoms for each condition Age old story Discusses how a condition develops and presents according to the patient s age Memory board Visual tricks that help you remember vital concepts and key treatments **Adult-Gerontology Acute Care Nurse Practitioner** Anthony M. Angelow, 2021-12-01 Master core content areas Test your knowledge Prepare for certification and clinical practice Assure that you have the in depth understanding of advanced pathophysiology advanced pharmacology advanced health assessment diagnostic reasoning clinical decision making and the interplay between these concepts that are required for exam success In addition to an depth

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Ambulatory Medicine H. Thomas Milhorn, MD, PhD, 2024-01-24 This guide began as a manual for family medicine residents Over time it evolved into a fairly complete coverage of most of the outpatient issues seen in their training In response to their urging I set out on the journey to convert the manual into the manuscript for this book The book is intended for primary care physicians nurse practitioners and physician assistants It serves three purposes 1 as a quick reference for primary care providers to use in the clinic when seeing patients 2 as a textbook and 3 as a study guide for Board examinations It covers a great number of topics briefly to allow quick reading To allow fast access the chapters are arranged in alphabetical order beginning with Chapter 1 Allergy and ending with Chapter 27 Women's Health Topics within chapters also are arranged in alphabetical order again to allow quick access Table of Contents Chapter 1 Allergy Chapter 2 Cardiovascular Chapter 3 Dermatology Chapter 4 Electrolyte Disorders Chapter 5 Endocrinology Chapter 6 Gastrointestinal Chapter 7 Hematology Chapter 8 Infectious Disease Chapter 9 Men's Health Chapter 10 Miscellaneous Chapter 11 Muscle Disorders Chapter 12 Neurology Chapter 13 Oncology Chapter 14 Ophthalmology Chapter 15 Orthopedics Chapter 16 Otolaryngology Chapter 17 Pain Chapter 18 Pediatrics Chapter 19 Preventive Medicine Chapter 20 Psychiatry Chapter 21 Pulmonary Chapter 22

Rheumatology Chapter 23 Sexual Disorders Chapter 24 Urgery Chapter 25 Urology Nephrology Chapter 26 Weight Problems Chapter 27 Women s Health REVIEWS AND WORDS OF PRAISE Dr Milhorn has done a Herculean job to create this textbook for ambulatory primary care providers that is current and comprehensive Each section covers the basics of pathophysiology signs and symptoms diagnosis and treatment The content is presented in a way that is easy to use and understand with excellent supporting photographs and tables Additionally the references are extensive and current I can definitely see using this resource not only in clinical practice but for exam review and preparation Diane Beebe MD Professor Emeritus and Past Chair Department of Family Medicine University Mississippi School of Medicine Past Chair American Board of Family Medicine ABFM If you are looking for a concise informative and well written quick reference for family physician residents physician assistants nurse practitioners or busy family physicians look no further Ambulatory Medicine by Dr H Thomas Milhorn distinguishes itself as the premier reference guide textbook and board review source on the market today it is in a class all by itself Lee Valentine DO Medical Director Mississippi State University Physician Assistant Program and past Program Director of EC Healthnet Family Medicine Residency Program

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lasers to measure optical deformability in cancer cells and therapeutics through the use of nanomaterials *International Journal of Medicine and Surgery*, 1932 **British Medical Journal**, 1906 *The Lancet*, 1875 *Saunders Nursing Guide to Diagnostic and Laboratory Tests* Louise M. Malarkey, Mary Ellen McMorrow, 2011-10-31 This complete lab book contains the latest information on testing organized alphabetically for quick reference It is both student friendly and provides great information for practicing nurses Significance of Test Results sections list the diseases and disorders that are associated with abnormal findings and Test Result Indications sections list the possible clinical significance of abnormal findings Tests are presented in a format that emphasizes the nurse's role and includes Basics the Nurse Needs to Know and Nursing Care The clinical purpose of each test is identified and how each test is performed is clearly explained A pronunciation guide for the name of each test helps with difficult terminology Alphabetical organization of the laboratory tests featuring alphabetical thumb tabs makes every test easy to find Also Called sections feature synonyms and abbreviations that help you identify specific tests Purpose of the Test states the indications of each test Basics the Nurse Needs to Know offers an explanation of each test in clear simple language Normal Values in standard and SI units include variations for gender and age where relevant How the Test is Done succinctly describes how each test is performed Significance of Test Results list the diseases and disorders that are associated with abnormal findings Interfering Factors list the factors such as drugs herbs and improper specimen collection and handling that inadvertently affect test results Nursing Care is divided into Pretest During the Test and Posttest listing in detail what the nurse does in the testing process Nursing Response to Critical Values and Nursing Response to Complications detail what you should be alert for before during and after the test and how to manage dangerous situations Explicit incorporation of nursing concerns related to lab tests can only be found in this lab book Over 50 new and updated pieces of art highlight how results are interpreted what equipment is used and how various techniques are performed Over 20 new tests prepare you for the types of tests you will encounter during your clinical experience Patient Teaching icons make crucial nursing content easy to find New Student Resources on Evolve feature a variety of supplemental learning tools Skills materials including skills checklists PDFs of skills and brief skills video clips help you master specimen collection and basic diagnostic procedures Patient handouts provide practical useable materials to make your clinical experience easier Audio pronunciations simplify the process of learning difficult terminology

New Tools for Environmental Protection National Research Council, Division of Behavioral and Social Sciences and Education, Committee on the Human Dimensions of Global Change, 2002-07-13 Many people believe that environmental regulation has passed a point of diminishing returns the quick fixes have been achieved and the main sources of pollution are shifting from large point sources to more diffuse sources that are more difficult and expensive to regulate The political climate has also changed in the United States since the 1970s in ways that provide impetus to seek alternatives to regulation This book examines the potential of some of these new tools that emphasize education information and

voluntary measures Contributors summarize what we know about the effectiveness of these tools both individually and in combination with regulatory and economic policy instruments They also extract practical lessons from this knowledge and consider what is needed to make these tools more effective The book will be of interest to environmental policy practitioners and to researchers and students concerned with applying social and behavioral sciences knowledge to improve environmental quality

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