Hypersensitivity Mechanisms An Overview

Despite wide recognition as a serious public health problem, anaphylaxis and hypersensitivity reactions remain under-recognized and under-diagnosed. This book fills the gaps in our understanding of the identification of triggers, recognition of clinical presentations, understanding of the natural history of these reactions, and selection of treatment strategies including those focused on cellular and molecular targets. The book provides a detailed examination of disease etiology, pathogenesis, and pathophysiology and their correlation to clinical practice. Forefront knowledge of the mediators and mechanisms of anaphylaxis is covered with an emphasis on how new discoveries shape our current and emerging therapies.

Allergy and Allergic Diseases has been organized to provide an up-to-date, clinically relevant compilation of one of the most exciting areas of investigation in medicine today-allergic disease, especially as it pertains to the skin, airways, and bowel. With the dramatic rise in the incidence of various allergic disorders worldwide, and the coming of age of the discipline of Clinical Immunology and Allergy, the interface between basic and clinical science in this arena demands highlighting in this comprehensive new syn thesis.1t is with the hope of filling this evident need that Allergy and Allergic Diseases: The New Mechanisms and Therapeutics has been put together. The book's content is divided into both basic and clinical sections, with emphasis on various components of the immune and inflammatory response as they relate to the development of allergic disease. Topics span the range from molecular biology to clinical symptomatology, with an effort to make this of interest to as broad a constituency as possible. This book will therefore be of substantial interest to specialists in Clinical Immunology and Allergy, scientists studying the cellular and molecular biology of in flammation and immunity, as well as internists, teachers, developers of medical school curricula, and members of industry focused on drug discovery and therapeutics. Indeed, a separate section has been added to deal with some specific issues in this latter field.

Drug Hypersensitivity: From Mechanisms to Improved Diagnosis and Standards of CareFrontiers Media SAHypersensitivityMechanisms and ManagementMechanisms and Causes of the Appearance of Hypersensitivity in CattleDrug AllergyClinical Aspects, Diagnosis, Mechanisms, Structure-Activity RelationshipsSpringer Science & Business Media

This book covers all aspects of hypersensitivity to drugs, providing practical information for non-specialist physicians as well as addressing issues of interest to practitioners in different specialties and presenting the expert knowledge required by specialist allergists and immunologists. The opening, general section discusses basics such as clinical manifestations, histopathology, mechanisms, risk factors, drug hypersensitivity in particular populations, and the full range of diagnostic methods. The second part of the book provides concise information on the most important drug classes and guides the reader on how to proceed when patients present with a suspected reaction. For each drug class, the current level of

evidence for use of the different diagnostic tools, including skin tests, provocation tests, and in vitro tests, is clarified, and management options, outlined. The inclusion of helpful tables and algorithms is designed to aid in decision making. Drug hypersensitivity is among the more complex allergological issues, and this book will meet the needs of general practitioners, internists, and specialists.

Biomarkers, especially those based on pharmacogenomics testing, have proved to be extremely useful for type A adverse drug reactions. Clinical practice guidelines based on biomarker testing are presently being developed and updated for type A adverse drug reactions. In contrast, little attention has been paid to the potential use of biomarkers in type B adverse reactions, characterized by the occurrence of reactions not directly related to the pharmacological properties of the drug. Drug-induced hypersensitivity belongs to those type B reactions. Drug-induced hypersensitivity reactions involve complex mechanisms that include, among others, the metabolic activation and haptenization of drug metabolites. Hence, factors that influence the pharmacokinetics of drug and metabolites may contribute to the development of some drug-induced hypersensitivity reactions. This implies that processes such as ADME (absorption, distribution, metabolism and excretion) that are typically involved in type A adverse drug reactions, may have a role in hypersensitivity reactions too. In addition to metabolic activation, several signal transduction pathways participate and modulate the development and the clinical presentation of drug hypersensitivity. The diverse mechanisms underlying such drug-hypersensitivity reactions lead to four major groups of reactions according to the Gell and Coombs classification: immediate, cytotoxic, immune complex and delayed. The enormous complexity of drug-hypersensitivity reactions is a consequence of the variety of mechanisms involved, which may be related, among others, to drug metabolism, generation of antigenic signals, stimulation and maturation of dendritic cells, presentation of haptens and mechanisms of cytotoxicity. In addition, a plethora of possible clinical presentations exists, including urticaria, angioedema, anaphylaxis, cytopenias, nephritis, serum sickness, vasculitis, contact dermatitis, drug rash, eosinophilia and systemic symptoms, Stevens–Johnson syndrome, toxic epidermal necrolysis and acute generalized exanthematous pustulosis. The rapid progress in the field in recent years indicates that the combination of several disciplines is essential to understand the mechanisms involved in this particular, and not completely understood, type of adverse drug reactions. The objective of this Research Topic is to present insights obtained from both basic and clinical scientists, which may include studies related to the identification, validation, refinement and clinical implementation of biomarkers for drug-induced hypersensitivity. The Topic aims to include recent findings related, but not limited to, potential phenomic, genomic, proteomic, metabolomic and signal transduction biomarkers. These biomarkers could eventually be used in clinical practice and/or these might contribute, as a proof of concept, to our understanding of the complex events leading to drug hypersensitivity reactions. In addition the Topic will cover recent developments and methodological advances in the diagnosis, prevention and therapeutic management of drug-induced hypersensitivity.

The variety of chemically diverse pharmacological agents administered to patients is large and continues to expand and with every new drug released, there is always potential for adverse reactions, some of them allergic. With its roots in immunology and

pharmacology, the science of drug allergy is becoming better understood and applied as its importance is increasingly recognized throughout the many branches of medicine. Drug Allergy: Clinical Aspects, Diagnosis, Mechanisms, Structure-Activity Relationships sheds new light on this field. Comprehensive in design, this authoritative title identifies the most important culprit drugs implicated in immediate and delayed drug hypersensitivities and offers up-to-date information on classifications, diagnoses, underlying mechanisms and structure-activity relationships. Chapters dealing with the molecular and cellular mechanisms of drug hypersensitivities, non-immune-mediated sensitivities and diagnostic methods are presented as introductory material for in-depth treatises on the ?-lactam antibiotics, other antibiotics and antimicrobials, drugs used in anesthesia and surgery, opioid analgesics, corticosteroids, monoclonal antibodies and other biologics, drugs used in chemotherapy, proton pump inhibitors, iodinated and gadolinium-based contrast media and non-steroidal anti-inflammatory drugs. In addition to being of immense value to clinicians, other health care professionals and researchers, this title will prove invaluable for those taking undergraduate and graduate courses in science and will also serve as a useful text for students of medicine, pharmacy, nursing and dentistry.

The second edition of this book spans the broad range of modern therapeutic drugs, from small molecules to biologic recombinant proteins. It offers a comprehensive review of the classification and description of different drug-induced systemic and cutaneous hypersensitivities; an up-to-date coverage of individual culprit drugs in each group of therapeutics; the diagnosis and mechanisms of reactions; and important structure-activity relationships. New content expands to two areas of drug allergy that have recently experienced explosive growth: biological therapies and new targeted chemotherapies. Other new and expanded chapters address antimicrobials; drugs used in anesthesia and surgery; opioids; non-targeted anti-cancer drugs; vaccines; and newly understood reaction mechanisms. This new edition includes photographs of a wide variety of cutaneous manifestations that will be of use to other clinicians as well as allergists and dermatologists. In addition to its wide clinical emphasis, the book’s mechanistic and structure-activity detail will provide valuable background for researchers and investigators in universities, medical research institutes, drug companies, and regulatory agencies. The second edition of Drug Allergy is an essential reference for practitioners across the medical disciplines from specialist clinicians, surgeons, GPs, residents, and medical students to nurses, pharmacists, dentists, and those taking undergraduate and graduate courses in the biomedical sciences.

Approaches the phenomenon of drug hypersensitivity in a comprehensive manner. Besides epidemiological aspects, it addresses the immunological mechanisms underlying these complicated reactions which go far beyond the IgE-mediated drug allergies also considered in this book. The book also covers clinical manifestations and new diagnostic methods, and introduces some recetly established animal models. Many topics are treated from multiple perspectives, and the 33 chapters are thoroughly cross-referenced.

The clinical approaches to the chronic degenerative diseases that drain our resources, and compromise our well-being, have

become almost exclusively symptom-focused. The common wisdom is that they are idiopathic with final outcomes to be managed rather than prevented or cured. That they are potentially reversible rarely enters into any discussion between doctor and patient. A Homeostatic approach to Cure and Prevention for Researchers and Clinicians Working in Toxicology, Immunology, Neurology, and Internal Medicine Reversibility of Chronic Degenerative Disease and Hypersensitivity, a four-part encyclopedia, offers a much different perspective on chronic degenerative disease, one that disputes the idiopathic label attached to most, as well as the usual fatalistic prognosis. The first volume, Regulating Mechanisms of Chemical Sensitivity, demonstrates that one aspect common to chronic diseases is the disruption of systemic and cellular homeostasis. Environmental pollutants play a large role, along with the contributions of genetic and life style factors, in disrupting the self-regulating mechanisms built into our normally adaptive cells. "As dyshomeostasis develops in the nervous system, causes should be found and removed before the metabolicinduced tissue changes take place and cause autonomous, irreversible fixednamed diseases to occur. ...Single and multiple chemicals in various doses either individually and/or in combinations can cause individual or multiorgan dysfunction of the endocrine system. The astute clinician must be aware of these factors in order to help the patient with hypersensitivity and/or chronic degenerative disease." Chapter 2 Drawing on a vast amount of data and clinical cases attended to by the authors in their own medical practices, this volume examines the complex relation that environmental pollution has with chronic degenerative diseases. It considers its impact on the body’s vast communication networks and what excessive overload does to homeostatic mechanisms. The authors factor in both general and specific environmental loads and how they alter and trigger genetic and non-genetic responses. Volume 1 begins with an overview of the physiologic basis of homeostasis, exploring various ways that the body deals with toxins and the networks it uses to communicate news of assault and makes provisions for adaptation. The text delves into the connective tissue matrix and considers vascular, neural, endocrine, and immune system responses to a variety of noxious assaults. "Both innate and acquired immunity can be and are altered in individuals with chemical sensitivity and chronic degenerative disease. ...With pollutant overload changes can occur in the lymphatic channels, the lymph nodes, and lymph node egress as well as the lymphatic cells. Changes in mucosal function and the effects of the autonomic nervous system are evident with environmental pollutant overload." Chapter 3 Written by two very knowledgeable clinicians, it brings together research of the highest caliber and provides extensive discussions involving sophisticated biochemical, endocrine, and neural science. The text provides clinicians with the knowledge to understand the triggering and processes of degenerative diseases, so that they might develop more efficient treatment and prevention plans. The book also supplies the knowledge and perspective that can lead research to more effective treatments. "The ground regulation system consisting of the connective tissue matrix, fibroblast, macrophages, mast cell, leukocyte, end capillary vessel and autonomic nerves, is a global information system for regulating the dynamics of homeostasis in the body. ...One’s knowledge of this process must be the guide to move through the onset of early end-stage disease and, eventually, see the manifestations to fixed-named autonomous diseases. It is this knowledge that offers us the greatest potential ... for preventing and reversing early homeostatic dysfunction." Chapter 1

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