

Infectious Agents and Pathogenesis

# Coxsackieviruses

## A GENERAL UPDATE

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# Coxsackieviruses A General Update

**Lei Shi**



## **Coxsackieviruses A General Update:**

Coxsackieviruses Mauro Bendinelli, Herman Friedman, 2013-03-09 It is now just 40 years since coxsackieviruses were first isolated by Dalldorf and Sickles in the eponymous town of Coxsackie New York Yet the overall contribution of coxsackieviruses to clinically evident disease of humans is still largely an open problem Following their discovery coxsackieviruses were under intense clinical and laboratory scrutiny for a long time Because of their relationship to polioviruses the understanding of their structure biochemistry biology and epidemiology advanced rapidly as a result of the formidable efforts that eventually led to the defeat of poliomyelitis The ability of these viruses to infect mice permitted dissection of their pathogenicity in an experimental host and elucidation of conditions that influence its expression Coxsackieviruses have been progressively associated with an increasing array of widely diverse human diseases However only some of the suggested causal correlations have been substantiated with satisfactory certainty For others conclusive evidence has so far resisted investigation Most important among the latter are chronic maladies such as dilated cardiomyopathy and juvenile diabetes that demand consideration In recent times there has been a partial eclipse of the subject of coxsackieviruses in the medical literature In addition to the difficulties encountered in pinpointing their pathogenic potential possible reasons include the general decline of interest in enteroviruses which ensued after the conquest of poliomyelitis and the continuous appearance in the limelight of new more esoteric and therefore more appealing viruses

**The Coxsackie B Viruses** Steven Tracy, Nora M. Chapman, Brian W.J. Mahy, 2013-06-29 S TRACY Late in the 1940s a virus was isolated from a young patient with a flaccid paralysis in the sleepy Hudson River town of Coxsackie in the state of New York Within the next few years it was apparent that this and other similar viruses were not polioviruses but were indeed a new group of viruses that by the mid 1950s had been found to be commonly associated with pediatric inflammatory heart disease Two groups of coxsackieviruses A and B were differentiated on the basis of the type of paralysis induced in suckling mice by these viruses Group B coxsackieviruses because of their primacy as etiologic agents of human acute viral myocarditis and its relatively common sequela dilated cardiomyopathy are the focus of this volume of the century approaches the massive international effort to eradicate polioviruses through vaccination as causes of human disease has been successful in the Western Hemisphere and in many parts of Europe and it is expected that worldwide eradication may be achieved within the near future While this is wonderful news there are sadly no similar efforts being planned to combat the numerous other human enteroviruses that daily incur widespread morbidity and mortality throughout the world While this is due in part to the lack of specific knowledge about the other human enteroviruses it is also due to the perceptions of industry that there is insufficient profit to be made by developing these vaccines

**New Concepts in Viral Heart Disease**  
H.P. Schultheiß, 2012-12-06 The recent rapid advances in our knowledge of immunological and virological mechanisms involved in the pathogenesis of viral heart disease makes it difficult for everybody working in this field to keep up with the

latest developments However much of what we know is still circumstantial and only vaguely substantiated Interdisciplinary understanding and cooperation thus seems necessary to get a better insight into the mechanisms by which viruses may initiate immunological organ specific tissue injury and disease This volume evolved out of an international symposium by the same title held on May 25-28 1988 in Tegernsee near Munich of which a wide spectrum of immunological virological diagnostic and clinical problems was covered Both review articles and new experimental and clinical data are included in this volume to give the reader an up to date information about current concepts and future aspects Chapter I serves as an excellent introduction to the epidemiology and natural history of dilated cardiomyopathy viral heart disease Although a definite viral etiology in myocarditis and dilated cardiomyopathy is often difficult to establish epidemiological and serological data incriminate a viral etiology underlying many cases of dilated cardiomyopathy Chapters II and III describe the current thinking on virological and immunological mechanisms involved in the pathogenesis of viral heart disease Among others virus tropism virus persistence possible mechanisms and genetic basis of post infection autoimmunity and the virus interaction with the immune system are discussed

**Cardiomyopathies and Heart Failure** Akira Matsumori, 2003-07-31  
This volume comprises the most up to date account of existing knowledge on the subject of cardiomyopathy and heart failure Its multidisciplinary approach covers cardiovascular medicine biochemistry immunology molecular biology virology epidemiology and clinical medicine Cardiomyopathies and Heart Failure Covers all major investigational and clinical aspects of the topic Provides syntheses as well as reviews Offers a unique multidisciplinary and international perspective Includes an extensive list of references to relevant work Targeted towards practicing physicians and basic researchers

**Enteroviral and Toxin Mediated Myalgic Encephalomyelitis/Chronic Fatigue Syndrome and Other Organ Pathologies** Roberto Patarca Montero, John Richardson, 2001-06-26  
Share the results of 45 years of front line medical research This valuable book covers varied organ pathology in a wide range of syndromes induced by viral infection and toxin exposure Enteroviral and Toxin Mediated Myalgic Encephalomyelitis Chronic Fatigue Syndrome and Other Organ Pathologies discusses such lethal problems as cardiomyopathy liver failure pancreatic cancer brain tumors and renal disease as well as the debilitating disorders of myalgic encephalomyelitis chronic fatigue syndrome and other post viral syndromes This essential text is profusely illustrated with photographs photomicrographs charts EKGs X rays and graphic depictions of other medical test results With case studies of individual patients and whole families Enteroviral and Toxin Mediated Myalgic Encephalomyelitis Chronic Fatigue Syndrome and Other Organ Pathologies brings you the benefit of seeing the patients and their illnesses in the context of their lifestyles work histories and family medical history Not a retrospective survey using medical records alone this unique book is the result of Dr Richardson's more than 45 years doing research with the prestigious Newcastle Research Group while engaged in General Family Practice The scope of this book includes the complex relationship between host and virus the aftereffects of viral illnesses on various systems including the cardiovascular nervous and endocrine discussions of varied

effects of viral syndromes on different family members consideration of viral effects on mother and fetus during pregnancy ideas for treatment and further research Enteroviral and Toxin Mediated Myalgic Encephalomyelitis Chronic Fatigue Syndrome and Other Organ Pathologies provides both powerful case studies and exciting theoretical considerations based on research It is an essential tool for family physicians as well as researchers into post viral syndromes and the effects of toxin exposure     Advances in Virus Research ,1998-11-03 *Advances in Virus Research     The Role of Immune Mechanisms in Cardiovascular Disease* Heinz-Peter Schultheiss,Peter Schwimbeck,2012-12-06 An involvement of the immune system is suspected in various cardiovascular diseases Recent advances in the fields of molecular biology genetics cell biology and immunology have made it possible to identify several pathomechanisms However still more questions arise with regard to the pathophysiology diagnosis and treatment of immunologically mediated cardiovascular diseases In this book leading scientists and clinicians from different areas of cardiology present the state of the art knowledge on the involvement of the immune system in myocardial and vascular diseases In the field of myocarditis both the virological and the immunological findings are presented and the interactions between the virus and the immune system are discussed Since the cellular immune system and its mediators play an important role in the inflammation by bacteria that cause endocarditis and septic shock studies investigating the underlying pathomechanisms are described Another major topic in this volume is the involvement of the immune system in arteriosclerosis and coronary heart disease which represents an important problem in clinical cardiology The final chapter addresses the question of therapeutic options presenting new approaches for a specific and effective therapy based on the current knowledge of immunologically mediated cardiovascular diseases     *iPSCs for Studying Infectious Diseases* Alexander Birbrair,2021-05-29 The series *Advances in Stem Cell Biology* is a timely and expansive collection of comprehensive information and new discoveries in the field of stem cell biology iPSCs for Studying Infectious Diseases Volume 8 addresses how important induced pluripotent stem cells are and how can they can help treat certain infectious diseases Somatic cells can be reprogrammed into induced pluripotent stem cells by the expression of specific transcription factors These cells have been transforming biomedical research over the last 15 years This volume will address the advances in research of how induced pluripotent stem cells are being used for treatment of different infectious diseases such as corona virus coxsackievirus salmonella infection influenza virus and much more The volume is written for researchers and scientists in stem cell therapy cell biology regenerative medicine and organ transplantation and is contributed by world renowned authors in the field Provides overview of the fast moving field of stem cell biology and function regenerative medicine and therapeutics Covers infections by several pathogens such as coronavirus coxsackievirus influenza virus herpes simplex virus 1 T gondii T cruzi S agalactiae N meningitidis Salmonella and more Is contributed by world renowned experts in the field     **Atlas of Heart Failure** Wilson Colucci,Eugene Braunwald,2013-03-09 In its third edition the *Atlas of Heart Failure* provides a comprehensive up to date overview of normal cardiac function the mechanisms

of dysfunction in heart failure and the therapeutic approaches that are available to manage the syndrome Designed to provide a detailed and comprehensive visual exposition of all aspects of cardiac function and dysfunction this atlas contains several hundred images each accompanied by detailed captions carefully selected by expert authors and reviewed by the editor

**DNA Tumor Viruses** Giuseppe Barbanti-Brodano, Mauro Bendinelli, Herman Friedman, 2013-11-21 DNA tumor viruses have long been useful experimental models of carcinogenesis and have elucidated several important mechanisms of cell transformation Research in recent years has shown that human tumors have a multifactorial nature and that some DNA tumor viruses may play a key role in their etiology The aim of this book is to assess our knowledge of DNA tumor viruses by reviewing animal models mechanisms of transformation association with human tumors and possibilities of prevention and control by vaccination Animal models of tumor virology have contributed significantly to our understanding of the epidemiology and pathogenesis of virus induced tumors Bovine papillomaviruses induce papillomas in the intestine of cattle The papillomas undergo a transition to carcinomas in cows feeding on bracken fern which produces a toxin with radiomimetic and immunosuppressive functions This example of cooperation between a virus and chemical carcinogens parallels the cooperative role of human papillomaviruses HPVs and herpes simplex virus type 2 HSV 2 with environmental carcinogens in the pathogenesis of cervical cancer Likewise hepatocarcinomas appearing in woodchucks chronically infected by woodchuck hepatitis virus WHV provide strong support for the relationship between hepatitis B virus HBV infection and human hepatocellular carcinoma Also the fact that WHV DNA integrates closely to cellular oncogenes suggests a possible molecular mechanism for the tumorigenesis induced by HBV

*Microorganisms and Autoimmune Diseases* Herman Friedman, Noel R. Rose, Mauro Bendinelli, 2012-12-06 Experts in microbiology and autoimmunity examine the association between microorganisms and the development of specific categories of autoimmune diseases The opening chapters explore the bacterial induction of diseases considered autoimmune in nature Subsequent chapters describe the role of viruses in the induction of these diseases and of diseases with an autoimmune component Specific topics include the role of streptococcal infection in rheumatic fever and the role of Klebsiella in the development of ankylosing spondylitis

Enteric Infections and Immunity Lois J. Paradise, Mauro Bendinelli, Herman Friedman, 2013-11-22 As we approach the end of this millennium enteric diseases remain important public health problems In many parts of the world sanitary measures have advanced little over the last century although some of the governments in those areas are striving to improve facilities for sanitation and to educate their people in proper handling of food water sewage and other modes of transmission of pathogenic microbes Even in highly developed countries outbreaks of diarrheal diseases occur today Globally the annual morbidity from enteric infections is estimated at several billion and deaths at several million per year In this volume descriptions of some of these diseases of immunity that results from them of clinical studies that promote understanding of individual and community immunity of molecular factors of pathogenesis and or of advances in vaccine development have been provided by leading

researchers At present the application of molecular methods is enhancing the identification of protective antigens of many microorganisms In addition new methods for design and delivery of vaccines are being devised Perhaps then more effective tools for reducing at least some of these diseases will be available within the next decade Lois J Paradise Herman Friedman Mauro Bendinelli vii Contents Introduction xv LOIS J PARADISE 1 Indigenous Microorganisms as a Host Defense 1 KENNETH H WILSON 1 Introduction 1 2 Composition of Intestinal Biota 2 3 Molecular Approaches to Determine Composition of the Biota 3 4 Role of the Host in Determining the Composition of the Biota *Rickettsial Infection and Immunity* Burt Anderson, Herman Friedman, Mauro Bendinelli, 2006-04-11 As a group rickettsiae and related bacteria contain a number of human pathogens that have recently named as causes of emerging diseases This unique volume offers a thorough and current review of information on the pathogenesis and immune response elicited by members of the genera Rickettsia Ehrlichia Coxiella Orientia and Bartonella in contributions authored by the expert clinicians and researchers who work with these organisms **Pulmonary Infections and Immunity** Herman Chmel, Mauro Bendinelli, Herman Friedman, 2013-11-11 Presenting the basic concepts and clinical implications of respiratory infection with special emphasis on the role of the immune system the field's leading researchers contribute detailed chapters on most of the major pathogenic and opportunistic bacteria fungi and viruses Their work will stimulate new research by microbiologists and immunologists teach clinicians the interaction between microorganisms and the host and provide health professionals with information necessary to evaluate public health procedures *Pseudomonas aeruginosa as an Opportunistic Pathogen* Mario Campa, Mauro Bendinelli, Herman Friedman, 2012-12-06 Assembling the latest research by an international group of contributors this volume covers the epidemiology pathogenesis clinical features and control measures of this elusive microorganism It will provide a deeper understanding of the pathogen to physicians and surgeons caring for patients infected or at risk of becoming infected with Pseudomonas Aeruginosa *Fungal Infections and Immune Responses* Juneann W. Murphy, Herman Friedman, Mauro Bendinelli, 2013-11-11 Biomedical scientists widely acknowledge that individuals immune responsiveness is important in resistance to infections by microorganisms including fungi Because of the devastating acquired immunodeficiency syndrome AIDS epidemic caused by the human immunodeficiency retrovirus it is now accepted that suppressed immune responses especially cellular immunity are important contributors to increased individual susceptibility to opportunistic infections including infections caused by fungi which were at one time thought to be very lowly or nonpathogenic Within the last few years there has been an almost explosive increase in interest and studies concerning the nature and mechanisms of the immune response to fungal infections Many immunologists who are not well versed in mycology have begun to study the nature and mechanisms of antifungal immunity using a wide variety of newer as well as more conventional immunologic technologies both in vivo and in vitro Up to the 1980s however there was little interest among basic immunologists concerning fungal immunity This situation has changed dramatically in the past half decade

mainly because of AIDS      **Neuropathogenic Viruses and Immunity** Steven Specter, Mauro Bendinelli, Herman Friedman, 2012-12-06 There has been a tremendous increase in interest in the neuropathogenicity of viruses during the past decade as we have come to recognize that the human immunodeficiency virus which causes the acquired immunodeficiency syndrome AIDS can infect glial cells and cause neurological disease Yet this increase has not been limited to AIDS but has extended to viruses that infect either or both the central and peripheral nervous systems The changes examined here include both neurological and psychological diseases or syndromes Moreover the chapters in this volume review the interaction of the host immune system with the viruses examined and how such interactions may increase or decrease the neuropathogenicity of the viruses Questions regarding viral neuropathogenesis include 1 What is the mode of transmission of virus to the nervous system 2 What types of cells are infected and do they contain receptors for the virus 3 What is the extent of damage that results from viral infection 4 What are the immunologic mechanisms by which damage is mediated or limited Many of these questions remain unanswered but this volume delves into efforts to provide some answers      **Mycobacterium tuberculosis** Mauro Bendinelli, Herman Friedman, 2012-12-06 Tuberculosis once again occupies a special position in the areas of infectious diseases and microbiology This disease has been important to mankind since even before biblical times Tuberculosis has been a major cause of morbidity and mortality in humans especially in highly urbanized Europe until a few decades ago Indeed this disease became a center of many novels plays and operas since it appeared to be quite popular to have the heroine dying of consumption Most importantly tuberculosis also became the focus of attention for many investigations during the 19th and even the 20th centuries Major advances were made in the areas of isolation and identification of M tuberculosis and related microorganisms The discovery by Robert Koch that tuberculosis was caused by an infectious agent revolutionized our thinking about diseases Koch's postulates were developed with tuberculosis in mind and became a focal point for many advances in microbiology and medicine Studies with mycobacteria as a central focus have also led to revolutionary new concepts about immunology in general Koch himself showed that those exposed to M tuberculosis develop a skin hypersensitivity or allergy to the microorganism's antigens an observation which was the starting point for many important developments Indeed immediate type hypersensitivity and atopic or IgE mediated allergy were defined in relation to the delayed type cutaneous hypersensitivity evinced with the tubercle bacillus      The Role of Viruses and the Immune System in Diabetes Mellitus Thomas Dyrberg, 2013-06-29 Research in diabetes has accelerated in two areas both of which are being reviewed in CTMI The first is the use of a variety of animal models the second is basic research in human investigation islet cell antigens and mapping of genes associated with susceptibility to disease Dr Thomas Dyrberg accepted editorial responsibility for this volume which covers the first area A second book to be published later in the year is edited by Drs Brekkeskov and Hansen CTMI 164 see page VI for contents Although the contributors to both volumes represent the international scientific community the editors are from the Hagedorn Research Laboratory in



Denmark Work at this institute and the Steno Memorial Hospital has been dedicated to research in diabetes for decades and the institutions were appointed WHO Collaborating Centres for Research and Training on the Pathogenesis of Diabetes Mellitus in 1983 It is worth noting that while addressing the hypothesis of the role of class II major histocompatibility glycoproteins in autoimmune diabetes insulin dependent diabetes IDDM a number of investigators established animal models in which class II molecules were expressed under the control of the rat insulin promoter While generating interesting information on 100M the finding of immunologic tolerance in such transgenic mice has attracted the attention of several basic immunologic laboratories for quite different reasons Thus we are reminded again of the Pasteur dictum that chance favors the prepared mind Michael B A Oldstone M D      **Myocarditis** Jr. Cooper, 2002-09-02 Leslie T Cooper Jr MD and a panel of leading clinical and scientific experts comprehensively review both advances in basic scientific understanding and current clinical knowledge of inflammatory heart disease On the clinical side they discuss the diagnosis prognosis and treatment of nonspecific and specific myocarditis in separate chapters devoted to such major idiopathic clinical entities as cardiac sarcoidosis giant cell myocarditis eosinophilic myocarditis Chagas disease rheumatic fever and human immunodeficiency virus related cardiomyopathy Research articles complete the picture with discussions of the role of apoptosis in viral myocarditis rat and mouse models of autoimmune giant cell and lymphocytic myocarditis and the latest available data on enteroviral proteases and cardiomyopathy

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