

## Concomitant infections with human papillomavirus and various mycoplasma and ureaplasma species in women with abnormal cervical cytology

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### ABSTRACT

**Purpose:** The objective of the present study is to verify possible association between infections with mycoplasmas and ureaplasmas and the presence of HPV infections in women diagnosed with abnormal cervical cytology.

**Material/Methods:** The investigation included 387 non-pregnant women among whom: 62 were diagnosed with ASCUS, 167 with LSIL, 27 with HSIL, 49 with cervical carcinomas, and 82 females with normal cytology.

The presence of HPV infection and identification of both ureaplasma and mycoplasma were confirmed by PCR using specific primers.

**Results:** HPV infections were demonstrated in 156 females (40%), with mycoplasmas and/or ureaplasmas were confirmed in 93 cases (24%).

In HPV-positive patients, infections with mycoplasmas/ureaplasmas were more frequent, particularly for ureaplasmas (*U. urealyticum* p=0.004, *U. parvum* p=0.027). The percentage of females infected with *U. urealyticum* significantly increased in women diagnosed with cervical carcinoma as compared to controls.

The statistical analysis demonstrated that the risk of HPV infection while already infected with any of the four analyzed species of *Mycoplasmataceae* increased two-fold. With concomitant of *U. urealyticum* infection, the risk of HPV infection was 4.7-fold greater than in the absence *U. urealyticum* infection.

**Conclusion:** Since the presence of *U. urealyticum* associates significantly with the HPV infection, genotyping of the ureaplasma species should be recommended.

**Key words:** HPV, mycoplasma, ureaplasma, squamous intraepithelial lesions

### INTRODUCTION

Human papillomavirus (HPV) infections strongly associate with cervical carcinogenesis [1]. It appears that a significant stimulating effect on the process of carcinogenesis may be also exerted by other factors, such as concomitant sexually transmitted diseases [2,3]. Microorganisms from the family *Mycoplasmataceae* (mycoplasmas and ureaplasmas) represent atypical lacking cellular wall bacteria that either closely adhere to epithelial cells of the urinary tract or penetrate these cells.

The presence of different members of the *Mycoplasma* species (*M. hominis* - *Mh*, *M. genitalium* - *Mg*) is also associated with various urogenital diseases [4-6]. These microorganisms adhere to various other human cells, penetrate the cells and disturb the normal cell metabolism, and cause DNA damage (progressive chromosomal loss and translocations). These bacteria may also trigger chronic inflammation of the urinary tract. Mycoplasma-mediated oncogenesis has a long latency and requires a chronic persistent infection (close interaction with mammalian cells for long-period of time without causing acute cytopathic effects) [7-10]. Lukic *et al.* suggested that

# Concomitant Infections

**Luis R. Espinoza**



## **Concomitant Infections:**

**Concomitant Infections** F. E. G. Cox, L. H. Chappell, 2001-08-16 Explores the interactions between parasites and other infectious agents with particular emphasis on immunological and ecological aspects

## **Infection and Cancer:**

**Bi-Directorial Interactions** Michael R. Shurin, Yasmin Thanavala, Nahed Ismail, 2015-11-02 This unique book summarizes current knowledge on co development of infectious diseases and cancer It provides an overview of the complex and unique role of the immune system inflammation tumor mediated immunosuppression and infection induced immunomodulation in cancer and infection progression Chapters are organized into themed parts beginning with a look at the historical perspective of human tumor viruses then aspects and examples of infection related cancers and cancer associated infections The work discusses how cancer and infection associated immune responses interact in a bi directorial fashion and how these interactions may evolve during both disease progression and in response to therapy The phenomenon of independent development of cancer and infection in the same host known as comorbid cancer infection progression is explored Understanding the complex pathways involved in the progression of infection and cancer will allow the prevention of the development of certain types of cancer as well as advancing prophylactic anti cancer vaccines Readers of this work will discover innovative approaches for multidisciplinary projects focusing on the design of original therapeutic modalities for cancer therapy The book will therefore be particularly valuable to scholars interested in cancer immunology and researchers and clinicians in the field of basic and applied immunobiology and microbiology

## ***Infections and the Rheumatic Diseases***

Luis R. Espinoza, 2019-09-26 This book provides a comprehensive and up to date review of the basic and clinical aspects of infections and infectious processes that trigger or aggravate a variety of autoimmune and inflammatory musculoskeletal disorders It delivers a timely update on the interactions between infection and rheumatic diseases in order to provide clinicians with the tools they need for proper diagnosis and treatment The book is divided into five main sections The first examines the basic aspects of bacterial infections with a discussion of molecular biology the microbiome various types of bacteria that cause infection and recent advances in biologic therapy The next section focuses on different forms of viral arthritis including hepatitis arthritis arthritis associated with alpha viruses and parvovirus related arthritis Subsequent chapters then discuss arthritis caused by mycobacteria fungi spirochete and other miscellaneous arthritides Following this are various analyzations on reactive arthritis and infection related rheumatic diseases such as Whipple s Disease SAPHO Syndrome rheumatic fever and HIV associated rheumatic manifestations Finally the book closes with three chapters on external impacts on infectious diseases such as climate change vaccinations and systemic lupus erythematosus **Infections and the Rheumatic Diseases** is an essential resource for physicians and related professionals residents fellows graduate students and nurses in rheumatology clinical immunology and internal medicine

## **Spirochaetales Infections: Advances in**

**Research and Treatment: 2011 Edition** , 2012-01-09 Spirochaetales Infections Advances in Research and Treatment 2011

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**Important Helminth Infections in Southeast Asia** ,2010-07-09 This thematic volume provides authoritative up to date reviews pertaining to the epidemiology public health significance and shifts therein control current activities successes setbacks persisting challenges e g sanitation universal coverage of health services health related behavior of the key parasitic diseases in Southeast Asia The book also discusses the new tools and approaches for enhanced discovery and control of helminthic diseases Informs and updates on all the latest developments in the field Contributions from leading authorities and industry experts

**Infectious Complications in Cancer Patients** Valentina Stosor,Teresa R. Zembower,2014-04-05 While advances in both the treatment of cancer and the management of its complications have led to significant improvement in patient survival infections remain a significant cause of morbidity and mortality in patients with neo plastic disease In this patient population infection risk results from a complex interplay between the host s underlying immunodeficiencies local tumor effects and treatment induced immunosuppression New chemotherapeutic approaches and antimicrobial prophylaxis and treatment practices continue to shape the spectrum of infections in these patients Clinicians who treat infections in cancer patients are continually challenged by the emergence of new pathogens and by the increasing antimicrobial resistance of established ones The aim of this book is to emphasize unique aspects of management of infectious diseases in the cancer patient With the increasing complexity of this patient population optimal management requires a multidisciplinary approach and this fact is fully reflected in the contributions all from recognized authorities in the field Ultimately it is hoped that this volume will assist specialists in infectious diseases and haematology oncology in the diagnosis management and prevention of infection and optimization of the overall care of patients with malignancies

**Congenital and Other Related Infectious Diseases of the Newborn** ,2006-10-04 This book is directed toward the molecular composition pathogenesis diagnosis treatment and control of congenital and other related diseases of the newborn that are caused by a variety of viruses These viruses comprise several families that include Herpesviridae HSV 1 HSV 2 HSV 6 HSV 7 CMV and varicella zoster Parvoviridae parvovirus B19 Lentiviridae HIV Hepadnaviridae HBV Flaviviridae HCV and Togaviridae RV Leading researchers in childhood diseases and virology from Brazil Germany Ireland Italy Japan Spain and

the United States of America report on the up to date advances in the molecular virology immunology biochemistry pathology diagnosis prevalence and treatment of selected congenital and other related diseases of the newborn Contains recommendations for diagnosis risk assessment prophylaxis and treatment of viral and parasitic infections of most organisms involved in congenital diseases An impressive list of internationally known scientists in the field of congenital diseases and related subjects      **Clinical Approach to Infection in the Compromised Host** Robert H. Rubin, Lowell S.

Young, 2007-05-08 At the beginning of the new millennium it is opportune to raveling of the molecular pathways of impaired host review what has been accomplished in the field of infec fense mechanisms and the characterization of the genetic tious diseases during the last decades of the previous mutations involved with the prospect of novel strategies century The paradigm of the immunocompromised host for therapeutic interventions and possible corrective gene has taught much about the pathophysiology of infectious therapy In this foreword I will take a helicopter view of diseases particularly with regard to immunological as the various aspects of host defense mechanisms with pects of host defense In the beginning Robert Good special emphasis on genetic factors because of their re called immunodeficiency syndromes experiments of na vance for the course and outcome of infections ture In the 1960s and subsequent decades the clinical During life there exist phases of age related c and immunological aspects of immune deficiencies were promised immune functions After birth there is a phys studied and adequate treatment attempted A reflection of logical immune deficiency because the production of an these developments were the three successful meetings on bodies commences slowly upon contact of the neonate these topics in Veldhoven The Netherlands 1980 Stir with microorganisms and upon vaccination      *Deep Sternal Wound Infections*

Raymund E. Horch, Christian Willy, Ingo Kutschka, 2017-01-19 This concise and practical handbook covers the basics of pathophysiology diagnosis interdisciplinary surgical management prevention and rehabilitation of patients with deep sternal wound infections and sternal osteomyelitis All relevant aspects and surgical procedures are explained in an easily understandable way Additionally special approaches and preventive measures are highlighted with regard to the perioperative handling as well as the rehabilitation possibilities Through concise texts with numerous illustrations the book is ideal for the practice and as a supplement to further studies This book is suitable for all specialists who are involved into the treatment and diagnosis of sternal wound infections particularly cardio thoracis thoracic plastic vascular surgeons cardiologists radiologists and rehabilitation physicians      Basics of HIV Infection Mr. Rohit Manglik, 2024-05-16 Offers an

overview of HIV transmission prevention clinical stages and treatment Also highlights the role of counseling and nursing care in patient support      **Feigin and Cherry's Textbook of Pediatric Infectious Diseases - E-Book** James Cherry, Sheldon L. Kaplan, Gail J. Demmler-Harrison, William Steinbach, Peter J. Hotez, John V Williams, 2024-08-29 Selected for 2025 Doody s Core Titles in Pediatrics Widely considered the premier text in pediatric infectious diseases Feigin and Cherry s Textbook of Pediatric Infectious Diseases 9th Edition provides authoritative up to date coverage of this rapidly changing field Extensively

revised by Drs James Cherry Sheldon L Kaplan Gail J Demmler Harrison William J Steinbach Peter J Hotez and new editor John V Williams this two volume reference delivers the information you need on epidemiology public health preventive medicine clinical manifestations diagnosis treatment and much more It serves as a reliable everyday resource for practicing ID specialists and an invaluable reference for medical students residents and fellows in ID pediatricians and internists and others who work with neonates children and adolescents or in public health Discusses infectious diseases according to organ systems that may be affected as well as individually by microorganisms placing emphasis on clinical manifestations that may be related to the organism causing the disease Provides detailed information regarding the best means to establish a diagnosis explicit recommendations for therapy and the most appropriate uses of diagnostic imaging Includes expanded information on Q fever antibiotic resistance and antibiotic agents human coronaviruses pox viruses and infections in the compromised host and contains new COVID 19 content across numerous chapters Features a new chapter on antimicrobial stewardship and new coverage of antivirals for pox viruses Reflects today's more aggressive infectious and antibiotic resistant organisms as well as emerging and re emerging infectious diseases Contains hundreds of full color images many are new including clinical photos radiographic images drawings charts and graphs

### **Pediatric Infectious Diseases**

**Revisited** Stefan Wirth, 2007-08-08 The fifth volume of Birkhäuser Advances in Infectious Diseases is focused on pediatric infectious diseases In modern medicine the discipline pediatric infectious diseases is an important medical specialty The successful prevention of childhood diseases like diphtheria tetanus and pertussis has made a major contribution to the improvement of public health Understanding the biology of causative agents and the pathogenesis is an essential step in achieving control and elimination of disease Today pediatric infectious diseases research is closely interconnected with other disciplines This volume addresses vaccination historical epidemiological and sociocultural issues as well as clinical and molecular biological aspects of pediatric infectious diseases New insights into the pathogenesis of infection are presented and an update on diagnostics prevention and treatment of pediatric bacterial viral fungal and parasitic diseases is provided The role of emerging new pathogens is also pointed out Finally the future perspectives of pediatric infectious diseases are highlighted Therefore this book aims at an interdisciplinary audience of clinicians and non clinicians pediatricians infectious disease researchers virologists microbiologists as well as public health scientists and politicians We would like to sincerely thank the staff of Birkhäuser publishers and notably Dr Beatrice Menz for editing this volume of the Advances in Infectious Diseases series Most of all we would like to thank all our colleagues who are international experts and scientists in their respective field and who generously shared their knowledge in the broad interdisciplinary area of pediatric infectious diseases with us

**Infectious Diseases of the Fetus and Newborn E-Book** Jack S. Remington, Christopher B. Wilson, Victor Nizet, Jerome O. Klein, Yvonne Maldonado, 2010-08-27 Infectious Diseases of the Fetus and Newborn Infant written and edited by Drs Remington Klein Wilson Nizet and Maldonado remains the definitive source of information in this

field The 7th edition of this authoritative reference provides the most up to date and complete guidance on infections found in utero during delivery and in the neonatal period in both premature and term infants Special attention is given to the prevention and treatment of these diseases found in developing countries as well as the latest findings about new antimicrobial agents gram negative infections and their management and recommendations for immunization of the fetus mother Nationally and internationally recognized in immunology and infectious diseases new associate editors Nizet and Maldonado bring new insight and fresh perspective to the book Get the latest information on maternal infections when they are pertinent to the infant or developing fetus including disease transmission through breastfeeding Diagnose prevent and treat neonatal infectious diseases with expert guidance from the world s leading authorities and evidence based recommendations Incorporate the latest findings about infections found in utero during delivery and in the neonatal period Find the critical answers you need quickly and easily thanks to a consistent highly user friendly format Get fresh perspectives from two new associate editors Drs Yvonne Maldonado head of the Pediatric Infectious Disease program at Stanford and Victor Nizet Professor of Pediatrics Pharmacy at University of California San Diego and UCSD School of Medicine Keep up with the most relevant topics in fetal neonatal infectious disease including new antimicrobial agents gram negative infections and their management and recommendations for immunization of the fetus mother Overcome the clinical challenges in developing countries where access to proper medical care is limited Apply the latest recommendations for H1N1 virus and vaccines Identify and treat infections with the latest evidence based information on fighting life threatening diseases in the fetus and newborn infants

COVID-19 Viral Sepsis Uzma Syed,Cindy Hou,2023-08-08 COVID 19 Viral Sepsis Impact on Disparities Disability and Health Outcomes introduces the concepts of viral sepsis its origins and its implications COVID 19 is a leading cause of viral sepsis with considerable impact on morbidity and mortality Early recognition of signs and symptoms of COVID 19 can potentially impact patient outcomes The book opens with an introduction and overview of sepsis its clinical manifestations prevention and management It goes on to discuss viral sepsis and sepsis caused by COVID 19 COVID 19 its diagnosis management sequelae long term consequences challenges and opportunities round out the coverage Users will find valuable key principles related to the recognition prevention diagnosis and treatment of sepsis due to COVID 19 Provides an overview of the clinical picture of COVID 19 associated viral sepsis Examines structural racism COVID 19 related healthcare disparities and the impact of this infectious disease on various communities Discusses challenges of secondary bacterial and fungal infections and long term consequences of COVID 19 as well as opportunities for treatment

Introduction to Clinical Infectious Diseases Joseph B. Domachowske,2025-04-29 The field of infectious diseases drifts and shifts as new pathogens emerge or re emerge new treatment modalities become available and new prevention strategies are implemented Students of medicine and the clinically experienced teachers who help to steer their education will benefit from Clinical Infectious Diseases A Problem Based Approach because each chapter first defines a clinical diagnosis and moves to descriptions of

common and or classic causes of the problem while including tables lists and descriptions of the rare and unusual etiologies we all find so fascinating General management approaches are included to help build foundations of clinical care of infections including but not limited to the administration of antibiotics Reminders of classic complications seen with specific infections and or their treatment are used to emphasize the importance of ongoing vigilance even after a specific microbiologic diagnosis has been identified Common causes of each problem are emphasized Unusual and rare causes are mentioned briefly with clinical clues about when to consider them Case descriptions are used to support facilitate and refine the learner s deductive clinical reasoning skills The book is written for a broad audience of medical trainees by a diverse group of medical experts then edited by an infectious disease physician scientist educator to maintain a primary focus on the infection aspects of each problem Basic content is reviewed first then layered with advancing complexity Call out boxes are used to emphasize key concepts while figures and tables provide insights into more complex rare but important and or classic features of infection As such the book will appeal to a broad range of students and trainees from those just entering the health care field to those who have already reached subspecialty training     Advances in Insect Physiology ,2005-12-02 Advances in Insect Physiology publishes eclectic volumes containing important comprehensive and in depth reviews on all aspects of insect physiology It is an essential reference source for invertebrate physiologists and neurobiologists entomologists zoologists and insect biochemists First published in 1963 the serial is now edited by Steve Simpson Oxford University UK     **Index-catalogue of Medical and Veterinary Zoology** ,1979     **Advances in Parasitology** David Rollinson,S.I. Hay,2011-12-20 First published in 1963 Advances in Parasitology contains comprehensive and up to date reviews in all areas of interest in contemporary parasitology Advances in Parasitology includes medical studies on parasites of major influence such as Plasmodium falciparum and trypanosomes The series also contains reviews of more traditional areas such as zoology taxonomy and life history which shape current thinking and applications Eclectic volumes are supplemented by thematic volumes on various topics including control of human parasitic diseases and global mapping of infectious diseases The 2009 impact factor is 6 231 Contributions from leading authorities and industry experts Informs and updates on all the latest developments in the field     **Emerging Infectious Diseases** ,2011-07     Coccidioidomycosis Hans E. Einstein,Antonino Catanzaro,1985



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