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Kawasaki Syndrome. Anne H. Rowley and Stanford T. Shulman... 405–414

Summary: Kawasaki syndrome (KS) is an acute, sometimes fatal vasculitis of young children. KS has replaced acute rheumatic fever as the most common cause of acquired heart disease in children in the United States. The illness is manifested by prolonged fever, conjunctival injection, enanthem, exanthem, erythema and swelling of the hands and feet, and cervical adenopathy. These acute features of illness are self-limiting, but coronary artery abnormalities occur in 20% of untreated patients. The etiology of the illness is unknown, but its clinical and epidemiologic features are most consistent with an infectious cause. Common cardiovascular manifestations of the illness include myocarditis, pericardial effusion, and coronary artery aneurysm formation. Treatment with intravenous gamma globulin (IVGG) and aspirin within the first 10 days of illness reduces the prevalence of coronary artery abnormalities from 20% in those treated with aspirin alone to 4%. Patients who develop coronary artery aneurysms, particularly those who develop giant coronary artery aneurysms, may suffer myocardial infarction secondary to thrombosis or stenosis in the abnormal vessel. Additional research to determine the cause of KS is urgently needed to allow for improved diagnosis, more specific therapy, and prevention of the disorder.

Onychomycosis: Pathogenesis, Diagnosis, and Management. Boni E. Elewski 415–429

Summary: Although not life-threatening, onychomycosis (a fungal infection of the nail, usually caused by a dermatophyte) constitutes an important public health problem because of its high prevalence (about 10% of the U.S. population) and associated morbidity. The disease can have certain negative consequences for patients, such as pain, and can potentially undermine work and social lives. This review discusses the etiology, classification, diagnosis, and treatment of onychomycosis. Four types of onychomycosis are recognized based on the site and pattern of fungal invasion. Dermatophyte fungi are the predominant pathogens, but yeasts (especially Candida albicans) and nondermatophyte molds may also be implicated. Accurate diagnosis requires direct microscopy and fungal culture. The differential diagnosis includes psoriasis, lichen planus, onychogryphosis, and nail trauma. Onychomycosis is more difficult to treat than most dermatophytoses because of the inherent slow growth of the nail. Older antifungal agents (ketoconazole and griseofulvin) are unsuitable for onychomycosis because of their relatively poor efficacy and potential adverse effects. Three recently developed antimycotic agents (fluconazole, itraconazole, and terbinafine) offer high cure rates and good safety profiles. In addition, the short treatment times (<3 months) and intermittent dosing schedules are likely to enhance compliance and reduce the costs of therapy.

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Respiratory Syncytial Virus Vaccines. Robert A. Dudas and Ruth A. Karron. 430–439

Summary: Respiratory syncytial virus (RSV) is the most important cause of viral lower respiratory tract illness (LRI) in infants and children worldwide and causes significant LRI in the elderly and in immunocompromised patients. The goal of RSV vaccination is to prevent serious RSV-associated LRI. There are several obstacles to the development of successful RSV vaccines, including the need to immunize very young infants, who may respond inadequately to vaccination; the existence of two antigenically distinct RSV groups, A and B; and the history of disease enhancement following administration of a formalin-inactivated vaccine. It is likely that more than one type of vaccine will be needed to prevent RSV LRI in the various populations at risk. Although vector delivery systems, synthetic peptide, and immune-stimulating complex vaccines have been evaluated in animal models, only the purified F protein (PFP) subunit vaccines and live attenuated vaccines have been evaluated in recent clinical trials. PFP-2 appears to be a promising vaccine for the elderly and for RSV-seropositive children with underlying pulmonary disease, whereas live cold-passaged (cp), temperature-sensitive (ts) RSV vaccines (denoted cpts vaccines) would most probably be useful in young infants. The availability of cDNA technology should allow further refinement of existing live attenuated cpts candidate vaccines to produce engineered vaccines that are satisfactorily attenuated, immunogenic, and phenotypically stable.

***Campylobacter upsaliensis*: Waiting in the Wings.** Billy Bourke, Voon Loong Chan, and Philip Sherman 440–449

Summary: Despite strong epidemiological evidence supporting an important role for Campylobacter upsaliensis as a human enteropathogen, it remains relatively unknown in the realm of clinical microbiology. Clinical studies indicate that infection with this organism usually is associated with benign self-limiting diarrhea. However, more serious illnesses, including spontaneous abortion and hemolytic-uremic syndrome, recently have been associated with human infections. Understanding of the virulence properties and molecular biology of C. upsaliensis is beginning to evolve. There is now a pressing need for controlled, prospective epidemiologic studies in addition to further in-depth investigation of the pathogenesis of this enteric campylobacter to more precisely define its role in human disease. Furthermore, since C. upsaliensis is sensitive to the antibiotics routinely used in Campylobacter selective media, widespread appreciation of the importance of this organism will rely on the development of widely applicable, effective techniques for its isolation.

Pathogenesis and Diagnosis of Shiga Toxin-Producing *Escherichia coli* Infections. James C. Paton and Adrienne W. Paton 450–479

Summary: Since their initial recognition 20 years ago, Shiga toxin-producing Escherichia coli (STEC) strains have emerged as an important cause of serious human gastrointestinal disease, which may result in life-threatening complications such as hemolytic-uremic syndrome. Foodborne outbreaks of STEC disease appear to be increasing and, when mass-produced and mass-distributed foods are concerned, can involve large numbers of people. Development of therapeutic and preventative strategies to combat STEC disease requires a thorough understanding of the mechanisms by which STEC organisms colonize the human intestinal tract and cause local and systemic pathological changes. While our knowledge remains incomplete, recent studies have improved our understanding of these processes, particularly the complex interaction between Shiga toxins and host cells, which is central to the pathogenesis of STEC disease. In addition, several putative accessory virulence factors have been identified and partly characterized. The capacity to limit the scale and severity of STEC disease is also dependent upon rapid and sensitive diagnostic procedures for analysis of human samples and suspect vehicles. The increased application of advanced molecular technologies in clinical laboratories has significantly improved our capacity to diagnose STEC infection early in the course of disease and to detect low levels of environmental contamination. This, in turn, has created a potential window of opportunity for future therapeutic intervention.

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Quantitation of Cytomegalovirus: Methodologic Aspects and Clinical Applications. Michael Boeckh and Guy Boivin..... 533–554

Summary: Cytomegalovirus (CMV) is an important pathogen in transplant recipients and human immunodeficiency virus (HIV)-infected individuals. Major progress has been made in developing quantitative detection methods for CMV in recent years. Due to their high sensitivity,

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