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A PRACTICAL GUIDE FOR THE DIAGNOSIS AND TREATMENT OF PEDIATRIC PNEUMONIA

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Abstract

Introduction: Age is the best predictor of the cause of pediatric pneumonia, viral pneumonia being most common during the first 2 years of life. The absence of a symptom cluster of respiratory distress, tachypnea, crackles and decreased breath sounds accurately excludes the presence of pneumonia (level II evidence). Bacterial cultures of samples from the nasopharynx and throat have no predictive value; however, Gram staining and culture of sputum from older children and adolescents are useful (level III evidence). Oral antimicrobial therapy will provide adequate coverage for most mild to moderate forms of pneumonia in children (level III evidence). Parenteral therapy is typically reserved for neonates and patients with severe pneumonia admitted to hospital (level III evidence).

Objectives: To develop guidelines for the diagnosis and management of community- acquired pediatric pneumonia. They are the only guidelines to address antimicrobial treatment from an age-related, etiologic perspective.

Patients and methods: The patients are tipically in pediatric age. The methods to evaluate studies on treatment are considered well-conducted randomized placebo-controlled trials as level I (strong) evidence, well-designed controlled studies without randomization (including cohort and case–control studies) as level II (fair) evidence and expert opinion, case studies and before–after studies as level III (poor) evidence.

Conclusions: Increased awareness of the causes of pneumonia, accurate diagnosis and prompt treatment should reduce costs associated with unnecessary investigations and complications due to inappropriate treatment.

Key words: Clinical assessment, empirical antimicrobial therapy, laboratory testing and radiography.

Introduction

Pneumonia occurs more often in early childhood than at any other age. Identifying the cause of pneumonia in children is difficult because of the lack of rapid, commercially available, accurate laboratory tests for most pathogens. Thus, empirical therapy is the common course in most cases. Children had previously been excluded from treatment guidelines (1,2) because of differences between adults and children in frequency and type of underlying illness and causative pathogens. A hierarchical evaluation of the strength of evidence modified from the methods of the Canadian Task Force on the Periodic Health Examination (4) was used. To evaluate studies on treatment, the consensus group considered well-conducted randomized placebo-controlled trials as level I (strong) evidence, well-designed controlled studies without randomization (including cohort and case–control studies) as level II (fair) evidence and expert opinion, case studies and before–after studies as level III (poor) evidence. The choice of antibiotics on the basis of various organisms' susceptibility to antimicrobial agents and the generalization of experience from another clinical condition involving the same organism also constituted level III evidence. For studies examining other aspects of pediatric pneumonia (e.g., epidemiologic features, and clinical and laboratory evaluation), the application of such a hierarchy of evidence was not feasible or appropriate. Different criteria were used instead. For epidemiologic studies, evidence derived from a population-based sample was considered superior to results from a hospital-based sample. In addition, studies that followed a population prospectively were preferred over cross-sectional surveys. Several "viralwatch studies" — involving the enrolment of neonates and their families and follow-up over the first few years of life with both telephone calls and office visits—provided incidence data in a well-defined denominator population and thus were considered superior to poorer quality studies. Analogous to the hierarchical criteria for evidence on treatment, cohort studies were preferred over crosssectional studies or descriptive studies. For the review of studies of clinical and laboratory diagnosis, the diagnostic test and "gold standard" had to be determined independently. A spectrum of illness severity was preferred. When possible, a discussion of interrater or intrarater reproducibility is included. Thus, cohort studies (level II evidence) form the basis of review of the epidemiology and diagnosis sections. These study designs usually constitute the highest quality