

Clinical characteristics of pneumonia medicine and integrated management of pulmonology in childhood illnesses.

Angela Roshangar*

Institute for Lung Research, Universities of Giessen and Marburg Lung Center, Philipps University, Germany

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Abstract

The branch of medicine that deals with the causes diagnosis, prevention and treatment of diseases affecting the lungs. Pulmonary medicine deals with many diseases and conditions, including: ARDS (acute respiratory distress syndrome), asthma, COPD (chronic obstructive pulmonary disease), cystic fibrosis, interstitial lung disease, lung cancer, lung transplants, occupational lung disease, pulmonary hypertension, pulmonary tuberculosis, sarcoidosis of the lungs, and SARS (severe acute respiratory syndrome). Pulmonary medicine is also sometimes called pulmonology which is the science concerned with the anatomy, physiology, and pathology of the lungs.

Keywords: Pneumonia medicine, Integrated management, Childhood illnesses.

Introduction

Some pulmonologists practice in dedicated pulmonary medicine practices or as part of a multidisciplinary group practice and provide consultative services for other physicians and follow patients with respiratory disease longitudinally. Others may work within hospitals to provide patient care and consultative services. Because pulmonologists have expertise in respiratory failure and complex interventions such as mechanical ventilation, they frequently oversee medical intensive care units in hospitals. As this role involves care of critically ill patients, training in pulmonary medicine is often coupled with training in critical care medicine. This dual training uniquely qualifies critical care pulmonologists (sometimes called “intensivists”) for work in intensive care units [1].

Clinical characteristics of pneumonia in children with heart disease

Pneumonia is the most common disease and also the leading cause of death in children worldwide. It is estimated that about 6% of young children will experience at least one episode of pneumonia in the first 2 years of life. In low-and-middle-income countries, the rate of pneumonia is still high and pneumonia remains being the major cause of morbidity and mortality of young children. Although there has had general improvement in living status, nutrition and vaccination, more than 700,000 children less than 5 years died from pneumonia globally. In early childhood, the lungs are easily damaged by infection and non-infectious factors, and further structural and functional changes may occur. Pulmonary infection can cause inflammation, which activates CD4⁺ T cells, macrophages, and increases IL-8 expression, and this reaction may damage the ciliated epithelium and infiltrate the surrounding parenchyma. Therefore, during this critical period of

development, recurrent pneumonia in children may adversely affect the structure and function of the lungs, and increase the risk of chronic lung diseases or respiratory diseases when the child grows up. In a previous study among adults who were diagnosed with bronchiectasis, 30–60% of them had repeated lower respiratory tract infections during childhood [2].

Hospitalized pneumonia

A key decision that needed to be made at the outset was how broadly to target pneumonia cases throughout the healthcare system. There is a compelling reason to begin by studying children in the community; the majority of pneumonia episodes are nonsevere and are managed in the community by healthcare workers (HCWs) at primary healthcare facilities. However, if the illness worsens, the child may progress through the hierarchy of the healthcare system from primary to secondary or tertiary care. At the same time, the etiology of pneumonia may also evolve, for example, from a viral upper respiratory tract infection to a viral lower respiratory tract infection and develop into a severe illness through superinfection of the lung by opportunistic colonizing bacteria. Studying children at all grades of severity would provide valuable insights into pneumonia pathogenesis [3].

However, the resources required to undertake a comprehensive etiology study at primary healthcare facilities, rather than referral hospitals, would be very considerable. The procedures used to define etiology, such as sputum induction, percutaneous lung aspiration, pleural aspiration, and gastric lavage, are not practicable without the support of an inpatient facility.

Integrated management of childhood illnesses

The primary objective of the WHO clinical case definition was to capture the majority of cases of pneumonia for rapid treatment with antibiotics and supportive therapy to reduce

childhood mortality. The assumption was that most severe pneumonia was bacterial in origin and that making antibiotics available to such children would save lives. Subsequently, a meta-analysis of 9 community-based trials using the WHO clinical case definition of nonsevere pneumonia confirmed that antibiotics reduced all-cause mortality by 24% among children <5 years. [4]. This pragmatic perspective has led to a set of definitions that emphasizes sensitivity over specificity to achieve substantial public health gains. The age of the last recurrent pneumonia episode was significantly older in the group with underlying diseases. It is possible that the existence of underlying diseases may cause children to be hospitalized with pneumonia more often when the age is young, and their hospital stay was much longer due to more complicated diseases. According to previous studies, the underlying diseases related to recurrent pneumonia were oropharyngeal in coordination with aspiration syndrome, bronchial asthma, immune disorders, and congenital cardiac defects. All of the above reasons may cause damage to the structure and function of the lungs, and further make the lungs more susceptible to other recurrent and subsequent infections.

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*Correspondence to:

Angela Roshangar
Institute for Lung Research,
Universities of Giessen and
Marburg Lung Center,
Philipps University, Germany
E-mail: angela.roshangar@staff.uni-marburg.de