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Description of the Term "Frequently ILL Children"

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Abstract: Respiratory diseases in children represent both a medical and social problem, with their annual increase necessitating the improvement of existing approaches and the introduction of new strategies for diagnosis, treatment, and prevention.

Keywords: frequently ill children, recurrent infections, immune system weakness, pediatric health, chronic illness, respiratory infections, risk factors.

Introduction

The term "recurrent respiratory diseases" (RRD) emerged in both international and domestic literature approximately 10 years ago. In global medical practice, it has been used to designate a group of children who, in domestic pediatric practice, are commonly referred to as frequently ill children (FIC). It is important to note that RRD is not a nosological entity or a diagnosis but rather a term indicating a higher incidence of respiratory tract diseases in a specific group of children compared to their peers.Notably, there is a divergence of opinions regarding the category of children to whom this term applies, both in international and domestic literature and practice. Some authors argue that the FIC group should include only those patients whose recurrent acute respiratory infections (ARIs) result from transient, correctable deviations in the body's defense systems. This approach helps to avoid diagnostic errors in cases where conditions such as allergic respiratory diseases (e.g., allergic rhinitis, bronchial asthma), recurrent and chronic diseases of the oro- and nasopharynx, congenital anomalies of the bronchopulmonary system, primary immunodeficiencies, mucociliary insufficiency, various enzymopathies (including alpha-1 antitrypsin deficiency), gastroesophageal reflux, cytopenias, and others are mistakenly classified under the FIC category.

Methodology

At the same time, other researchers consider it acceptable to categorize children solely based on the frequency of ARI episodes per year, regardless of the presence or absence of chronic infection foci. According to this perspective, FIC develop chronic infection foci and associated allergic and comorbid diseases over time.However, despite differences in the criteria for classifying children into the RRD group, researchers agree that frequent and particularly severe ARIs can lead to impairments in physical and neuropsychological development, contribute to reduced immune system functionality, and disrupt the body's compensatory-adaptive mechanisms. All these factors may facilitate the early development of chronic inflammatory processes in the respiratory organs, including bronchial asthma. This pattern of RRD development is due to the characteristics of local and systemic defense mechanisms in early childhood and preschool age, and it is observed in children worldwide, regardless of their country's economic development level.It should be noted that among all respiratory tract diseases in children, ARIs have an absolute predominance. They account for more than 90% of all respiratory system illnesses in children. The highest incidence of respiratory infections is

observed in preschool and early school-age children who attend organized groups. The peak incidence occurs between 6 months and 6 years of age, with an average of 4 to 6 illnesses per child per year, which may lead to social maladaptation due to isolation from peers. Frequent and prolonged ARIs in children consume significant financial resources, causing economic losses associated both with direct treatment costs and the loss of parental work time.

Result and discussion

The high frequency of respiratory infections in children is attributed not only to physiological characteristics of immune system maturation but also to adverse antenatal and perinatal factors. Among frequently ill children (FIC), more than 10% are preterm, and over 40% have a birth weight of less than 3000 g. Other contributing factors include constitutional type, parental smoking—especially maternal smoking—high contagiousness of viral infections, unstable immunity to certain pathogens, and the diversity of sero- and biotypes of pneumotropic bacteria (pneumococci, staphylococci, Haemophilus influenzae), among many others.Factors leading to frequent ARIs in children are generally classified as endogenous and exogenous.Endogenous factors include genetic and functional predispositions (lymphatic constitution), adverse prenatal and postnatal conditions, delayed immune system maturation, and comorbidities (e.g., gastrointestinal diseases, allergies, autonomic dysfunction). Despite the variety of endogenous factors, genetic predisposition plays a primary role, manifesting under the influence of unfavorable external factors. This is supported by the fact that children with frequent ARIs often have a family history of high ARI incidence in their parents during childhood, which tended to decrease as they aged.Exogenous factors contributing to the development of RRD in children include unfavorable socioeconomic conditions, low levels of hygiene awareness in families, early socialization (attendance at preschool institutions at an early age), stress, macro- and micro-environmental factors (industrial pollution, passive smoking, poor housing conditions), improper nutrition and daily routine, polypharmacy, repeated antibiotic courses, and changes in the properties of many pathogens.

When attempting to assess the health status of children with RRD, it was found that they generally have various underlying conditions and diseases, primarily of allergic origin (48.5%), as well as primary immunodeficiency conditions (9.5%), among others. At the same time, 40.5% of children with RRD do not exhibit any transient or functional immune system abnormalities. Currently, the markers of weakened immunity in children include viral infections occurring 4–7 times per year, prolonged recovery periods after illness, recurrent fungal infections resistant to treatment, allergic reactions, and digestive system dysfunctions (diarrhea, constipation). Clinical equivalents of RRD, according to several authors, include rhinitis, tonsillopharyngitis, tonsillitis, tracheitis, bronchitis, bronchopneumonia, eustachitis, otitis, adenoiditis, and sinusitis.

Considering the potential risks faced by children with RRD, these include dysfunction of various organs and systems, particularly the respiratory system, leading to chronic inflammatory processes in the bronchopulmonary system; impairment of the cardiovascular, gastrointestinal, and autonomic nervous systems, resulting in the failure of compensatory-adaptive mechanisms; immunological compromise due to reduced immune resistance; development of underlying conditions such as rickets, dystrophy, anemia, and others; delays in physical and psychomotor development due to reduced motor activity and limited exposure to fresh air as a result of frequent illnesses; weakened immune resistance contributing to allergy development, exacerbated by polypharmacy, including the immunosuppressive effects of antibiotics and antipyretics; impaired social adaptation due to frequent absence from peer interactions; and significant economic burdens on parents and the state, leading to restrictions on career choices and potential long-term effects on reproductive health.

According to modern concepts, immunopathogenesis is gaining increasing significance in the pathogenesis of infectious diseases. It is considered in the context of interactions between microorganisms and the host organism, as well as the properties of pathogens, which are capable not only of mimicking but also modifying the human immune response. The immune response is

known to be a set of protective reactions of the immune system aimed at limiting the spread and eliminating the infectious agent. This response includes a nonspecific component, provided by innate immunity factors, as well as adaptive immunity (the specific immune response to pathogen antigens), which is mediated by T- and B-lymphocytes in cooperation with auxiliary cells.

Conclusion

However, before examining the peculiarities of immune status in children with RRD, it is essential to recall the age-related differences between the immune system of children and that of adults. The immune system in children is characterized by the relative immaturity of the macrophage-phagocytic system and a tendency toward incomplete phagocytosis, reduced production of interleukins and interferons, and low cytotoxic activity of lymphocytes and natural killer cells. Additionally, in early childhood, there is a weakening of complement system activation, delayed antibody synthesis, and reduced IgA concentration. Collectively, these factors predispose children to frequent respiratory infections, more severe disease courses, and an increased risk of complications.The development of respiratory infections in children is significantly influenced by a combination of factors. On one hand, these include age-related immune characteristics such as immaturity, a "late start" of immune responses, and a lack of prior immunological experience, as well as the short duration of antiviral immunity. On the other hand, the high contagiousness of respiratory pathogens plays a crucial role. Early childhood is characterized by an increased susceptibility to respiratory viral infections, which should not be considered a deviation from the norm but rather an ontogenetic feature of this developmental period, dictated by the ongoing maturation of the child's anti-infective defense mechanisms.

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