Defects in Lung Host Defenses May be the Cause of Respiratory Infections

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Serious or recurrent respiratory infections are unusual for normal people, although a particularly virulent microbe, a new species of microbe, or a large inoculum may always cause illness. A very efficient but complex system of respiratory tract host defenses provides protection; this combination of mechanical defenses and immunological defenses (cellular immunity, macrophage phagocytes, various opsonins and polymorphonuclear neutrophils) will be reviewed.

If sinopulmonary infections are frequent and recurrent, it may be appropriate to consider that a defect in ciliary clearance, deficiency in immunoglobulins (antibodies) of the IgA and/or IgG classes, or a related problem with respiratory secretions as found with cystic fibrosis is responsible for the problem with infections. Such a disease may be recognized in teenage or young adults and not only in infants and children. The clinical presentation and an approach to evaluation and diagnosis will be given; therapy will be reviewed also.

When pneumonia develops, one or a combination of several defense mechanisms in the alveolar space may be abnormal or not functioning well. If an encapsulated bacterium is the cause of pneumonia, it may be that the availability of opsonizing antibodies is lacking, especially the IgG subclasses such as IgG₂. Alternatively, pneumonia with an intracellular microbe such as Pneumocystis carinii, Mycobacterium tuberculosis, Legionella pneumophila or with certain viruses such as cytomegalovirus or human immunodeficiency virus may reflect inadequate killing and containment by alveolar macrophages and a defect in cell-mediated immunity. This problem involves macrophage-lymphocyte cellular interactions relating to immune effector function. This intercellular physiology will be reviewed and illustrated in the context of several contemporary forms of pneumonia.

References inclue: