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Latex-Related Occupational Asthma: Success of Primary Prevention

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Safety in the workplace is of critical concern to employers and employees alike. Sometimes, however, agents such as dusts, chemicals, proteins, fumes, vapors, and gases that an employee encounters at work can cause health problems such as asthma. Asthma is characterized by inflammation with mucus production and constricted airways; symptoms include wheezing, difficulty breathing, and chest tightness. Occupational asthma is broadly defined as asthma caused by work exposure. Symptoms may be severe enough that working in that environment is not an option.

There are multiple features that can help lead to the diagnosis of occupational asthma. The key factor is that symptoms started while at work and initially improved during weekends or holidays away from work. It may take months to years before asthma symptoms start because there is a period of sensitization to the agent first, especially if it is a larger antigen such as latex.

Objective measures to aid in the diagnosis include monitoring peak expiratory flows. An employee can blow into this simple device 4 times a day for 4 weeks including before and after work shifts and record the values. A pattern of decreased peak flows while at work or after leaving work is evidence of occupational asthma. Measures to confirm latex allergy are limited but include commercial blood RAST tests for IgE to latex or non-approved latex skin tests.

There are over 400 diverse products that have been implicated in causing occupational asthma. The best studied of these is latex, but also include animals, grains, detergent enzymes, and chemicals used in industrial paints. Some chemicals are corrosive and result in airway inflammation and constriction upon immediate exposure. Healthcare workers inhaling natural rubber latex protein resulted in occupational asthma when high-protein powdered latex gloves were introduced into the marketplace in the 1980s following recommendations for universal precautions. The prevalence of latex-induced occupational asthma is approximately 2% in latex-exposed workers. The risk of developing occupational asthma depends on the duration and degree of exposure to the agent and, for some agents, smoking exposure and genetics.

The primary treatment for occupational asthma is avoidance of the inciting agent. Medications used to treat

occupational asthma are the same as those used in non-occupational asthma. If the asthma is unrecognized and untreated once symptoms start, the condition may be irreversible. Symptoms may completely resolve if identified early and avoidance measures implemented. Latex induced asthma is a prime example of the success of primary prevention. Primary prevention seeks to eliminate the antigen at the source, as has been accomplished through the use of non-natural rubber latex gloves and low-protein, non-powdered gloves. Personal protective equipment, such as a well-fitted respirator, may be helpful temporarily if complete removal is not feasible. Secondary prevention is aimed at detecting latex-sensitized workers early before permanent disease occurs. Tertiary prevention refers to limiting symptoms in the worker already with occupational latex asthma.

Unfortunately, immunotherapy, or allergy injections for latex using latex extract caused severe allergic reactions in a high proportion of patients and are not available for treatment. Further studies are ongoing to assess the effectiveness and safety of immunotherapy in occupational asthma.

Another injection therapy for asthma is omalizumab, which is a drug that blocks IgE, the allergic antibody that mediates immune responses after exposure. Omalizumab is approved for treatment of allergic asthma, but data is lacking for specific studies in those with latex allergy.

Asthma caused by exposure to latex in healthcare workers has been greatly reduced by the substitution of powdered latex gloves with low protein, non-powdered latex gloves or latex-free gloves, highlighting a success in primary prevention of occupational latex asthma. This message should be broadly disseminated to other healthcare settings (nursing homes) and other industries such as food service where latex gloves might be used.

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