Editorial

Respiratory CSI: Diagnosing Occupationally Related Lung Disease

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In this issue of the *Southern Medical Journal*, Modi et al[1] describe how working in a popcorn factory led to a devastating, irreversible lung disease: bronchiolitis obliterans.

Environmental and occupational insults causing respiratory disorders are often difficult to diagnose, because recognition requires a certain amount of detective work by the physician. Although a thorough environmental and occupational exposure is part of a complete patient history, it is often lost in today's fast-paced medical visits. However, because the consequences of these potentially deadly exposures may not be obvious for years or even decades after the exposure, early detection and removal of the offending agent can be potentially life saving. Occupationally related injuries and illnesses have been estimated to affect upwards of 4.3 to 13.3 million Americans annually, with 5,800 to 63,000 job-related deaths and 862,200 work-related illness in 2004.[2,3] Unfortunately, the presentation of these work-related illnesses is often protean, mimicking or exacerbating common illnesses such as asthma. Furthermore, the disorder may develop slowly with no acute illness, and the patient may be unaware of the developing disease until it is too late. Thus, the only "clue" to a job-related etiology for a current acute illness, exacerbation of a preexisting illness, or risk for a future disease is the occupational and environmental exposure history.

Once a potential occupationally or environmentally related illness is contemplated, the real detective work begins with documenting and quantifying the exposure, and making a causal connection between the illness and exposure. If the exposure is a previously well-described and well-known hazard, such as asbestos or lead, the connection is easily made. If, however, the exposure is not a commonly known or well-defined one, such as diacetyl, an artificial "butter" flavoring used in prepared foods such as popcorn, the onus is on the physician to make the connection.

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In this edition of the *Southern Medical Journal*, Modi et al use their detective skills to diagnose an uncommon presentation of an occupational lung disease, bronchiolitis obliterans, from an uncommon exposure, diacetyl. This example of the relatively undescribed "popcorn worker's lung" emphasizes the need for a thorough exposure history; the patient was diagnosed and treated for asthma while he continued to be exposed to the real respiratory irritant causing his symptoms for over 20 years.

Flavoring-related bronchiolitis obliterans was first described in eight former workers of a microwave popcorn manufacturing plant in 2000, and later by the Missouri Department of Health and the National Institute for Occupational Safety and Health in 2002.[4,5] After thorough investigation of several reports in different states, a clearer picture appeared of the toxic effect of a volatile substance released from heating these flavorings in the absence of respiratory protection and inadequate ventilation.[4,5] Unfortunately, exposure to the diacetyl usually produced no acute illness or symptoms, but led in most cases to the insidious progression of irreversible lung disease. Bronchiolitis obliterans occurs more commonly in association with various collagen vascular diseases and as a manifestation of chronic rejection after lung transplantation. Thus, diagnosis of this rare lung disease and even rarer occupational lung disease could only be made upon recognition of past and present occupational exposures.

Although "flavor-induced lung disease" is a rare occupational disease, this case emphasizes the necessity of good occupational and environmental exposure histories by primary care physicians, as they are the first detectives to recognize and possibly prevent future diseases.

References

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Please see "A Case of Flavor-Induced Lung Disease" on page 541 of this issue.