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Reactive Airway Dysfunction Syndrome after inhalation of the Acrylonitrile: Perspective of the Pulmonologist

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Abstract

The reactive airway dysfunction syndrome (RADS) is a type of occupational asthma without a latency period, and it is induced by irritating vapor, fume or smoke. Toxicologists are often asked to assist in the evaluation of suspected RADS cases. Acrylonitrile {AN} (also called vinyl cyanide) is known to be extremely destructive to the tissues of the mucous membranes and upper respiratory tract and may cause pneumonitis and asthma if inhaled. This is a first RADS case report associated with AN vapor inhalation. The diagnosis was based on exposure data, clinical symptoms and signs, as well as respiratory function tests analysis and bronchoscopy. A previously healthy 35-year old man has sustained AN burns to his skin, with Computed Tomography obtained 48-hr after industrial exposure showing pneumonitis. He has also met other diagnostic criteria for RADS, as suggested by Brooks et al., including positive methacholine challenge test (MCT). Significantly, after first standard methacholine inhalation patient has developed acute asthma requiring urgent albuterol treatment. However his pre-MCT PFT was restrictive. Although pulmonary function tests (PFTs) in RADS might show airflow obstruction, this is not a requirement for either asthma or RADS diagnosis, if other pulmonary diseases are excluded. A true restrictive impairment, as noted in this patient is quite consistent with previous observations in asthma and RADS. This finding is not widely recognized and should not preclude the diagnosis of RADS or necessitate bronchoprovocation challenge, when asthma is clinically apparent. Subsequent bronchoscopy has showed persistently inflamed airway still evident nearly 2 years after AN inhalation.

Biography

Feldman was born in Moscow, USSR. He graduated from Second Moscow Medical School and has completed his Pulmonary and Critical Care Fellowship Training at Dartmouth-Hitchcock Medical Center, New Hampshire, USA. He holds board certifications in Internal Medicine, Pulmonary Disease and Critical Care Medicine. Feldman is also a practicing pulmonologist with a busy clinical practice that is caring for many patients with Asthma and Occupational Asthma. Feldman is a Medical Director of S. Carolina Pharmaceutical Research, an internationally recognized clinical respiratory research and training center located in Spartanburg, South Carolina. Over the past decade Feldman has served as Primary Investigator on many landmark Asthma and COPD trials. Feldman is the author and co-author of many peer-reviewed articles and manuscripts and has presented at many international forums on the subjects of Interventional Bronchoscopy, and respiratory Research. Feldman is also a President of Alliance Biomedical Group International, (ABGI) a network of Clinical Research Sites across USA, Russia, Hungary and Spain.