Inflammation a possible cause of higher mortality rates in older asthma patients

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Higher mortality rates among older adult asthma patients compared to their younger counterparts may be due, at least in part, to an increase in airway inflammation, according to a study conducted by researchers in Canada, who note that their results imply that elderly patients are either less likely to follow asthma medication dosing instructions, or that the underlying airway inflammation in elderly patients is relatively resistant to current anti-inflammatory therapies.

The study will be presented at the ATS 2012 International Conference in San Francisco.

"We found that asthmatic patients over the age of 65 have a higher proportion of airway inflammation when compared to younger patients, despite the fact that both groups received similar asthma treatment regimens," said study lead author Richard Leigh, MD, PhD, associate professor of medicine at the University of Calgary. "The fact that the majority of older patients were lifelong non-smokers indicates that asthma in the elderly is unlikely to be due to misclassification of chronic obstructive pulmonary disease (COPD)."

The Public Health Agency of Canada estimates that 7 percent of people over 65 have asthma, a prevalence rate similar to that reported in the United States. However, asthma-related mortality rates in both countries are about tenfold higher in asthmatics over 65 compared to any other age group.

"The reasons for this difference are unknown and, in this study, we sought to test the hypothesis that airway inflammatory characteristics in older adults with asthma differ from other age groups," said Dr. Leigh, who is also the GSK-CIHR Professor of Inflammatory Lung Disease at the University of Calgary.

The researchers drew from information contained in the University of Calgary Asthma Clinic for 1,046 asthma patients, including 930 patients under age 65 and 116 patients who were 65 or older, treated between April 2005 and June 2011.

"Induced sputum cell counts are performed on all patients attending our hospital-based outpatient asthma clinic to guide clinical management," Dr. Leigh said. "Patient data, including medications, spirometry measurements and sputum cell counts are entered into an electronic database. These are the data we used for our study."

Dr. Leigh and his colleagues performed a retrospective analysis to determine the nature of the airway inflammation in patients who were 65 or older, compared to those who were under age 65.

Patients were divided into four inflammatory types, based on the types and numbers of leucocytes, or white blood cells, present in the sputum: eosinophilic, neutrophilic, mixed granulocytic (both eosinophils and neutrophils) or pauci-granulocytic.

Leucocytes are primary components of the human immune system, responding to sites of infection and inflammation; the presence of leucocytes, and the numbers of cells present, can help clinicians objectively measure levels of airway inflammation.

At the conclusion of their study, the researchers found that 75 percent of older patients had higher than normal levels of eosinophils in their

sputum, while only 54 percent of younger patients had elevated eosinophil counts in their sputum samples. In addition, the median eosinophil count in the older group was 7 percent compared to 2 percent in the younger group, indicating higher levels of inflammation in the older patients. Neutrophil counts were not significantly different between older and younger patient groups. There were no differences in gender, body-mass index or treatment regimens between the two groups, and the majority (58 percent) of older patients were lifelong non-smokers. Older patients also had more severe airflow obstruction than younger patients.

"The increased inflammation seen in older patients in this study may help explain the reason why these patients tend to have worse clinical outcomes, including worse symptoms and lung function and increased numbers of exacerbations, compared to younger patients, and may be a potential explanation for the increased mortality seen in these older folks," Dr. Leigh said.

Dr. Leigh said the results also identify knowledge gaps and research opportunities that may ultimately lead to improved therapeutic approaches and healthcare outcomes in these patients.

"We need to do additional studies to determine whether this increased inflammation in these older patients is due to either the fact that they don't take their medications, or that the inflammation is relatively resistant to asthma treatment in some way," he said. "To that end, we are now conducting a study to link airway inflammation in patients older than 65 years of age to rates of medication adherence."

More information: "Asthma In Older Adults; Potential Factors To Explain Increased Mortality Rates" (Session B92, Monday, May 21, Room 2020-2022, Moscone Center; Abstract 27261)

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