News Release

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FOR MORE INFORMATION, CONTACT:
Nathaniel Dunford or Brian Kell
ndunford@thoracic.org or bkell@thoracic.org
ATS Office 212-315-8620 or 212-315-6442 (until May 14)
Cell phones 914-815-0503 or 516-305-9251

Session A23: COPD and Cardiovascular Disease: Strange Bedfellows
Sunday, May 18, 2014, 8:15 a.m. – 10:45 a.m.
Location: Room 8 (Upper Level), San Diego Convention Center

COPD Patients at Significantly Higher Risk of Heart Failure

ATS 2014, SAN DIEGO — As if increased risks of high blood pressure, respiratory infections, lung cancer and even depression weren’t enough, researchers say patients with chronic obstructive pulmonary disease (COPD) have another complication to worry about: heart failure. That’s according to a new study from the Morehouse School of Medicine in Atlanta, which found the prevalence of heart failure is significantly higher in patients with COPD compared to the rest of the study population. They also found that the risk was especially high among African-American patients with COPD.

The study’s findings were presented at the ATS 2014 International Conference.

“The relationship between COPD and coronary heart disease has been well studied, but substantially less information exists concerning the coexistence of COPD and heart failure,” said lead author Srinadh Annangi, MBBS. “For our study, we analyzed hospital discharge data from the National Hospital Discharge Survey (NHDS) to investigate the frequency and impact of heart failure on hospitalizations for subjects with COPD.”

The researchers reviewed 386,186,183 hospital discharge records from 2001 through 2010 and identified 33,338,505 patients aged 40 years and over who had COPD. Those records were further analyzed to identify patients who also had heart failure, and then stratified by race and age.

After analysis, they found that 28.7% of COPD patients had heart failure, compared to 13.0% in the background population. Looking at race, the researchers reported the following findings:
• 28.3% of European Americans with COPD had heart failure compared to 12.9% of the non-COPD European American population;
• 35.1% of African Americans with COPD had heart failure compared to 15.2% of the non-COPD African American population; and
• 25.3% of COPD patients from other populations had heart failure compared to 11.3% in their counterparts who did not have COPD.
• In cases where race was not reported, 28.1% of COPD patients had heart failure compared to 13.6% of those who did not have COPD.

With regard to age, they found:

• For patients from 40 to 59 years of age, 18.0% of patients with COPD also had heart failure compared to 5.4% of patients without COPD;
• For patients from 60 to 79 years of age, 27.5% of COPD patients had heart disease compared to 13.6% without COPD; and
• Among patients aged 80 years and older, heart failure was present in 38.6% of those with COPD and 24.4% of those who did not have COPD.

The researchers also found that patients with both COPD and heart failure had longer average hospital stays, higher in-hospital mortality rates and were discharged to long-term care facilities more often than patients with COPD alone.

“The co-existence of COPD and heart failure, which share common symptoms, may pose diagnostic and therapeutic challenges,” said study corresponding author Marilyn G. Foreman, M.D., M.S. “The long-term effect of both diagnoses over time remains to be determined.”

“As the prevalence of COPD gains traction in individuals of low socioeconomic status, the impact of simultaneous co-morbid diagnoses over decades of life could pose substantial fiscal, therapeutic, and social challenges,” she added.

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*Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

[Poster Board # 406] Chronic Obstructive Pulmonary Disease And Heart Failure - A Decade Analysis Of The National Hospital Discharge Survey, [Publication Number: A1107]
S. Annangi, MBBS, M.G. Foreman, MD, E.L. Flenaugh, MD
Atlanta, GA/US
Introduction:

Chronic obstructive pulmonary disease (COPD) is a global health issue. The relationship between COPD and coronary heart disease has been well studied but substantially less information exists concerning the coexistence of COPD and heart failure. We analysed hospital
discharge data from the National Hospital Discharge Survey (NHDS) to investigate the frequency and impact of heart failure on hospitalizations for subjects with COPD.

Methods:

We performed a retrospective population-based study using data for the period 2001 to 2010. International Classification of Diseases, Ninth revision (ICD – 9) coding was used to identify COPD (ICD9 codes 490, 491, 492, 496) and heart failure cases (ICD9 codes 428.0 to 428.9). Adults aged ≥ 40 years were included in the study. COPD cases were initially identified by extracting hospitalizations with any listing for COPD. Cases were stratified according to race and age groups for further analysis. Percentages obtained from descriptive statistics were analysed for statistical significance using the Chi-square test.

Results:

33,338,505 COPD cases (8.6%) were identified from a total of 386,186,183 discharges over the 10-year period. Hospitalized subjects were older and predominantly white (Table-1). The prevalence of heart failure was 28.7% in COPD cases compared to 13.0% in the background population (P<0.0001). Stratified by race, the prevalence of heart failure in COPD cases compared to the background population was 28.3% vs. 12.9% in European Americans (P<0.0001), 35.1% vs. 15.2% for African Americans (P<0.0001), 25.3% vs. 11.3% in others races (P<0.0001) and 28.1% vs. 12.7% in cases where race was not reported (P<0.0001). The same prevalence according to age groups was 18.0% vs. 5.4% (P<0.0001) for 40 - 59 years, 27.5% vs. 13.6% (P<0.0001) for 60 - 79 years, and 38.6% vs. 24.4% (P<0.0001) for 80 years and above. Compared to cases with COPD alone, cases with COPD and heart failure had longer average length of stay (6.3 days vs. 5.6 days, P < 0.0001), higher in-hospital mortality (5.6% vs. 3.5%, P < 0.0001), and more frequent discharges to long term care facilities (21.2% vs. 15.5%, P < 0.0001).

Conclusion:

The prevalence of heart failure is significantly higher in patients with COPD compared to the background population. African American patients with COPD had the highest prevalence of heart failure compared to all other races, regardless of age group. COPD patients hospitalized with a concurrent diagnosis of heart failure had higher mortality, longer average length of stay, and greater need for long-term care.

Table-1: Characteristics and prevalence of heart failure for COPD Patients, 2001 to 2010, by race:

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>White/European American (23,446,319)</th>
<th>Black/African American (2,537,472)</th>
<th>Other race (625,542)</th>
<th>No reported race (6,729,172)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence</td>
<td>28.7%</td>
<td>35.1%</td>
<td>28.3%</td>
<td>28.1%</td>
</tr>
<tr>
<td>Age Group</td>
<td>18.0%</td>
<td>27.5%</td>
<td>38.6%</td>
<td>21.2%</td>
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<tr>
<td>Mean Age, Years (±SD)</td>
<td>71.3 (±12.0)</td>
<td>66.9 (±12.8)</td>
<td>71.5(±12.2)</td>
<td>71.5 (±11.9)</td>
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<tr>
<td>Male (%)</td>
<td>48.7</td>
<td>50.5</td>
<td>57.7</td>
<td>50.1</td>
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<tr>
<td>Prevalence of heart failure by age groups (%)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Age 40 - 59</td>
<td>16.7</td>
<td>28.8</td>
<td>18.2</td>
<td>15.6</td>
</tr>
<tr>
<td>Age 60 - 79</td>
<td>26.8</td>
<td>36.9</td>
<td>24.5</td>
<td>26.6</td>
</tr>
<tr>
<td>Age ≥ 80</td>
<td>38.6</td>
<td>40.9</td>
<td>31.0</td>
<td>38.7</td>
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