Impact of chronic obstructive pulmonary disease on the natural history of atrial fibrillation: a report from the GLORIA-AF registry phase II & III

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Background: The relationship between chronic obstructive pulmonary disease (COPD) and atrial fibrillation (AF) remains unclear. COPD may influence the management and prognosis of AF and may affect treatments, including beta-blockers prescription.

Purpose: To investigate the association between COPD and AF, and assess the impact of COPD on treatment patterns and major adverse outcomes in a large contemporary global cohort of AF patients.

Methods: The GLORIA-AF Registry enrolled newly diagnosed AF patients with at least 1 stroke risk factor. Diagnosis of COPD and treatments (including oral anticoagulant [OAC]) prescribed were recorded by investigators at baseline. We evaluated clinical characteristics associated with the diagnosis of COPD at baseline, OAC and other treatment prescription, and risk of OAC discontinuation. Adjusted Cox-regression models were utilised to analyse the relationship of COPD with major outcomes including a primary composite outcome of all-cause death and major adverse cardiovascular events (MACE).

Results: 36,263 patients (mean age 70.1±10.5 years, 45.3% females) were included in this analysis. Patients with COPD (n=2,261, 6.2%) were older, and had higher thromboembolic risk. Increasing age, smoking status, BMI and cardiovascular comorbidities were associated with higher odds of COPD diagnosis at baseline. COPD was associated with higher odds of receiving OACs (Odds Ratio [OR] and 95% Confidence Interval [CI]: 1.31, 1.15-1.49), and with a higher risk of discontinuing OACs during follow-up (hazard ratio [HR]: 1.14, 95%CI: 1.03-1.27). COPD patients were more likely prescribed with digoxin and verapamil or diltiazem, with lower prescription of beta-blockers (OR [95%CI]: 0.79, 0.72-0.87; Figure 1) and amiodarone (OR [95%CI]: 0.83, 0.73-0.96). Patients with COPD were at higher risk of the primary outcome of all-cause death and MACE (Hazard Ratio [95%CI]: 1.78, 1.58-2.01; Figure 2), and were also found at higher risk of all-cause mortality, cardiovascular death, MACE and major bleeding, while no statistically significant differences were observed for thromboembolism. There was no statistically significant interaction between beta-blocker use and risk of the primary composite outcome in COPD patients.

Conclusions: COPD is associated with different treatment patterns in AF patients, higher risk of OAC discontinuation, and ultimately a poorer clinical prognosis, with an increased risk of all-cause death, MACE and major bleeding. Beta-blocker use appeared safe in COPD patients.
Figure 1
Figure 2

The figure shows the survival probability over time (in months) for two groups: No COPD and COPD. The survival probability decreases over time for both groups, with a significant difference between them indicated by the p-value of less than 0.0001.

The number of patients at risk at each time point is also shown:

- **No COPD**:
  - 24291 at 0 months
  - 23497 at 6 months
  - 22733 at 12 months
  - 21932 at 18 months
  - 20722 at 24 months
  - 17055 at 30 months
  - 13220 at 36 months

- **COPD**:
  - 1569 at 0 months
  - 1475 at 6 months
  - 1385 at 12 months
  - 1304 at 18 months
  - 1206 at 24 months
  - 950 at 30 months
  - 711 at 36 months

The survival probability for the No COPD group is generally higher than for the COPD group.