EABPCO-CPHG Study: Characteristics of French COPD patients dead while in general hospital for acute exacerbation

ABSTRACT #1463

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BACKGROUND

- Acute exacerbations, and in particular those leading to hospitalizations are major events in COPD history.
- According to the studies, in-hospital mortality due to COPD acute exacerbations varied between 2.5% and 30% [Groenewegen; Mohan; Nevin; Patil; Wang; Roche].
- As relatively little information is available about long-term outcome of COPD patients hospitalized for acute exacerbation, the French College of General Hospital Lung Specialists (CPHG) has enrolled a prospective cohort of patients hospitalized for COPD acute exacerbation in the pneumology departments of the French general hospitals, which it plans to follow up for 3 years.
- **Results obtained at the end of the hospitalization period in this population are presented hereafter**.

OBJECTIVES

- **To determine in-hospital mortality rate at the end of the hospitalization period for acute exacerbation**
- **To determine risk factors of in-hospital mortality in COPD patients hospitalized for acute exacerbation in a pneumology department of a French general hospital**

METHODS

- Between October 2007 and June 2008, data from all the COPD patients hospitalized for acute exacerbation in one of the 68 pneumology departments which agreed to participate in the study were collected on a standardized questionnaire, regardless of hospital admission types, comorbidities, intensity of COPD and of acute exacerbation [Piquet].
- The questionnaire included items concerning:
  - the patient
  - the COPD when stable (i.e., before the acute exacerbation)
  - the acute exacerbation
  - the types of hospital discharge (including death).
- The COPD diagnosis was established by a senior lung specialist.
- The definition of the Société de Pneumologie de Langue Française (SPLF) of "acute exacerbation" was used.
- Univariate analyses were performed to compare dead and alive patients. A multivariate analysis was performed to identify risk factors. The significant threshold was set at 0.05.
- All the data were collected anonymously. The French Data Protection Authority (Commission Nationale Informatique et Liberté) has approved the study protocol.

RESULTS

Study follow-up

- Data from 1,817 COPD patients were collected.
- Fig.1 summarizes the modalities of admission to the pneumology department.
- During the study, 48 (2.6%) patients were transferred from the pneumology department to an intensive care unit.

In-hospital mortality rates

- 45 of the 1,817 patients died during the hospitalization period: **the overall in-hospital mortality rate was 2.5%.**
- 9 of the 48 patients transferred from the pneumology to the intensive care unit died: **their mortality rate was 18.8%.**

Characteristics of patients who died during the hospitalization period - Univariate analyses (Tab.1)

- Compared to the other patients, patients who died during the hospitalization period were elder and more commonly ex-smokers.
- They more frequently reported a history of cardiovascular disease.
- Their dyspnea and bronchial obstruction before the acute exacerbation were more severe, and they more frequently presented with hypoxia.
- Their dyspnea at hospitalization was more severe and they presented with a greater number of severe clinical signs within the 24 first hours.

Risk factors of in-hospital mortality - Multivariate analysis (Tab.2)

- Age, history of cardiovascular disease, dyspnea intensity before the acute exacerbation (grade > 2), and severe clinical signs within the 24 first hours were the 4 factors that had a significant impendent effect on the mortality risk.

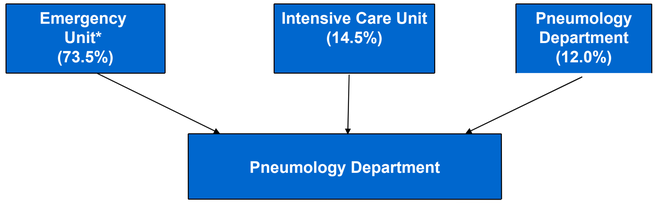
➔ **Mortality risk is increased in old patients with history of cardiovascular disease who presented with severe dyspnea before the acute exacerbation and numerous severe clinical signs within the 24 first hours of the acute exacerbation**.

Tab.2: Risk-factors of in-hospital mortality in COPD patients hospitalized for acute exacerbation

	OR	95% CI	p-value
Age (years)	1.06	1.02-1.10	0.002
Cardiovascular disease	2.28	1.06-4.91	0.036
Dyspnea grade >2* (MRC classification)	3.91	1.70-8.96	0.001
Severe clinical signs within the 24 first hours	1.34	1.18-1.53	<0.001

* Before acute exacerbation (MRC classification)

Fig.1: COPD Patients with acute exacerbation – Admission to the pneumology department



* Or in a limited number of cases from other department or other hospital

Tab.1: Characteristics of the patients, the COPD and the acute exacerbation – Comparison between patients who died and who did not died during the hospitalization period

Characteristics	Died (N = 45)	Alive (N = 1,772)	p-value
Patients' characteristics			
Sex (men): %	86.7	76.5	0.11
Age (years): mean +/- std	77.6 +/- 9.7	70.1 +/-11.2	**<0.0001**
Tobacco addiction: %			**0.026**
Non-smoker	4.4	6.7	
Ex-smoker	80.0	60.3	
Smoker	15.6	33.3	
Comorbidities & COPD complications: %			
Hypertension	35.6	35.0	0.94
Asthma	6.7	13.3	0.20
Coronary heart disease	33.3	18.6	**0.013**
Heart failure	26.7	12.3	**0.004**
Secondary pulmonary hypertension	17.8	7.1	**0.007**
Chronic right ventricular failure	17.8	4.2	**<0.0001**
COPD characteristics before the acute exacerbation			
Dyspnea, grade >2 (MRC classification): **%**	83.4	46.4	**<0.0001**
FEV1 (% pred.): mean +/- std	36.9 +/- 12.4	45.9 +/- 17.7	**0.0009**
Pa, O2 <60 mmHg: %	42.1	25.0	**0.017**
Acute exacerbation characteristics at hospitalization			
Dyspnea, grade >3 (MRC classification): **%**	97.8	88.5	**0.038**
Severe clinical signs within 24 first hours: mean +/- std	4.56 +/- 2.29	2.78 +/- 2.10	**<0.0001**

CONCLUSION

- **In-hospital mortality rate in COPD patients with acute exacerbation is 2.5% in the pneumology departments of the French general hospitals.**
- **Old COPD patients with history of cardiovascular disease, dyspnea of grade >2 before the acute exacerbation, and numerous severe clinical signs within the 24 first hours of the acute exacerbation had an increased mortality risk.**

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