Predictors of 1-year mortality at hospital admission for acute exacerbations of COPD

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ONLINE SUPPLEMENT

Additional methods

Epidemiological Data

The following demographic data were collected: age, sex, socio-economic and marital status, medical treatment prior to hospital admission, number of previous hospitalizations for documented acute exacerbation of COPD (within 2 years prior to the current event), including treatment during these admissions, smoking status and the best spirometric values obtained at a (recent) outpatient visit while the patient was in a stable condition. Medical treatment included information regarding the use of home ventilation and oxygen, long-term oral glucocorticoids, theophylline, antibiotics and inhaled medication. Long-term use of glucocorticoids was defined as the daily use of ≥5 mg prednisolone, or an equivalent, for at least 3 months as maintenance therapy. Active smoking status was defined as having smoked within the last 3 months. Results of lung function testing were preferably recorded when performed within 3 years prior to hospital admission. Otherwise spirometric data within 3 months after discharge were preferred over data >3 years prior to admission. Medical comorbidities including cardiovascular and other respiratory diseases, diabetes, renal impairment, hepatic disease or malignancies were also recorded based on patients' files and laboratory values. The presence of these comorbidities was in turn recorded by the specific attending medical specialist or resident.

Clinical Data

Physical examination findings, arterial blood gas levels, blood chemistry reports and chest X-ray findings at the Emergency Room (ER) were assessed and specifically controlled for signs of additional disease conditions like pneumonia and heart failure, potentially causally related to admission. An impaired mental status was defined as a Glasgow Coma Scale score of <15 or an otherwise altered level of consciousness. BMI was measured in kilograms per square

meter within 24 hours of hospital admission or, in case of additional heart failure, later on during hospitalization when the patient's weight reached a steady state.

Additional Results

Table 1e. *Documented comorbidity prior to admission, stratified by 1-year outcome*

Comorbidity*	**All (n=260)**	**Deceased (n=72)**	**Alive (n=188)**	**p Value**
Diabetes mellitus	43 (16.5)	16 (22.2)	27 (14.4)	NS
Insulin dependent	21 (8.1)	9 (12.5)	12 (6.4)	NS
Cardiac comorbidities	169 (65.0)	51 (70.8)	118 (62.8)	NS
Hypertension	103 (39.6)	32 (44.4)	71 (37.8)	NS
Coronary artery disease	77 (29.6)	25 (34.7)	52 (27.7)	NS
Cardiac arrhythmia	73 (28.1)	27 (37.5)	46 (24.5)	<0.05#
Congestive heart failure	58 (22.3)	24 (33.3)	34 (18.1)	<0.05#
Heart valve disease	28 (10.8)	12 (16.7)	16 (8.5)	<0.10
Cancer	68 (26.2)	17 (23.6)	51 (27.1)	NS
Respiratory	16 (6.2)	6 (8.3)	10 (5.3)	NS
Other	55 (21.2)	12 (16.7)	43 (22.9)	NS
Metastatic	6 (2.3)	4 (1.5)	2 (0.8)	<0.10
Respiratory comorbidities	156 (60.0)	46 (63.9)	110 (58.5)	NS
History of:				
Pneumonia**	82 (31.5)	32 (44.4)	50 (26.6)	<0.05#
Pneumothorax	15 (5.8)	8 (11.1)	7 (3.7)	<0.05
Tuberculosis	11 (4.2)	6 (8.3)	5 (2.7)	<0.10
OSAS	10 (3.8)	0 (0.0)	10 (5.3)	<0.10
Osteoporosis	35 (13.5)	12 (16.7)	23 (12.2)	NS
Fractures	15 (5.8)	8 (11.1)	7 (3.7)	<0.05
Renal comorbidities	28 (10.8)	12 (16.7)	16 (8.5)	<0.10
Renal failure	23 (8.8)	10 (13.9)	13 (6.9)	<0.10
Liver disease	10 (3.8)	8 (11.1)	2 (1.1)	<0.05
Hepatitis	4 (1.5)	3 (1.2)	1 (0.4)	<0.10
Peripheral vascular disease	81 (31.2)	24 (33.3)	57 (30.3)	NS
CVA/TIA	47 (18.1)	11 (15.3)	36 (19.1)	NS
Psychic comorbidities	47 (18.1)	16 (22.2)	31 (16.5)	NS
Depression/anxiety	27 (10.4)	8 (11.1)	19 (10.1)	NS
Addiction	21 (8.1)	9 (12.5)	12 (6.4)	NS
Gastrointestinal disease	39 (15.0)	16 (22.2)	23 (12.2)	<0.05
Gastric pain/ulcers	13 (5.0)	8 (11.1)	5 (2.7)	<0.05
Gastrointestinal bleeding	11 (4.2)	5 (6.9)	6 (3.2)	NS

Data are presented as No. (%). OSAS: obstructive sleep apnea syndrome; CVA: cerebrovascular accident; TIA: transient ischemic attack. NS: not significant; * Comorbid conditions do not have to be active. ** recorded by pulmonary physician. *# Included in multivariate analysis.*

Table 3e. *Mortality and readmissions during 1-year follow-up after hospital admission (n=260, unless noted otherwise)*

Outcome	**N**	**%**	**95% CI**
In-hospital mortality	15	5.8	2.9-8.6
1-year mortality	72	27.7	22.3-33.1
Total readmissions, No. *(n=245)**	135	55.1	48.9-61.3
1	65	26.5	21.0-32.0
2-3	50	20.4	15.4-25.5
> 3	20	8.2	4.7-11.6
AE-COPD readmissions, No. *(n=245)**	91	37.1	31.1-43.2
1	49	20.0	15.0-25.0
2	20	8.2	4.7-11.6
> 2	22	8.9	5.4-12.6
AE-COPD readmission *(n=91)*			
Treated with antibiotics	68	74.7	65.8-83.7
Treated with NPPV	32	35.2	25.4-45.0
Treated with MV	3	3.3	0.0-7.0

CI: confidence interval; AE-COPD: acute exacerbation of COPD; NPPV: noninvasive positive pressure ventilation; MV: mechanical ventilation. * n = 245 instead of 260 because of 15 in-hospital deaths.