

## Decompensation of Chronic Obstructive Pulmonary Disease in Intensive Care: About 30 Cases

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### Abstract

### Original Research Article

**Summary:** Chronic obstructive pulmonary disease is a slowly progressive chronic respiratory disease linked to smoking. Its evolution is marked by decompensation that can be life-threatening for the patient and thus require hospitalization in intensive care. The aim of our work is to describe the therapeutic management of patients hospitalized for decompensation of COPD and their clinical and etiological characteristics. The patients were all chronic smokers in 80% of cases with an average age of 62 years. Exacerbations were of infectious etiology in 76% with 43% bronchial superinfections and 33% pneumonia, and without identified cause in 15% of cases. Our patients were staged according to the GOLD classification. Stage 4 patients represented 63%, 56% had right heart failure and developed more exacerbations per year (4 on average) resulting in more hospitalization in intensive care (3 on average) while stage 3 patients represented 36% of all patients. Drug treatment was dominated by antibiotics, bronchodilators and corticosteroids. 80% of patients were on oxygen, 20% of whom were on long-term oxygen therapy. Ventilatory assistance was considered in 26% by means of non-invasive ventilation (NIV) and 16% required endotracheal intubation. In conclusion, decompensation of COPD alters the quality of life of patients and worsens the prognosis of COPD. According to the experience of our service, many therapeutic behaviors have been initiated by following international recommendations even if they remain controversial. However, a great effort is necessary, especially concerning the fight against tobacco.

**Keywords:** Decompensation-COPD-Oxygen therapy.

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## INTRODUCTION

COPD is a respiratory disease characterized by a decrease in airflow that is not fully reversible secondary to an inflammatory response. Its acute decompensation with the occurrence of acute respiratory failure is a reason for hospitalization in intensive care. The objective of our work was to describe the therapeutic management of patients with COPD in decompensation, and their clinical and etiological characteristics.

## PATIENTS AND METHODS

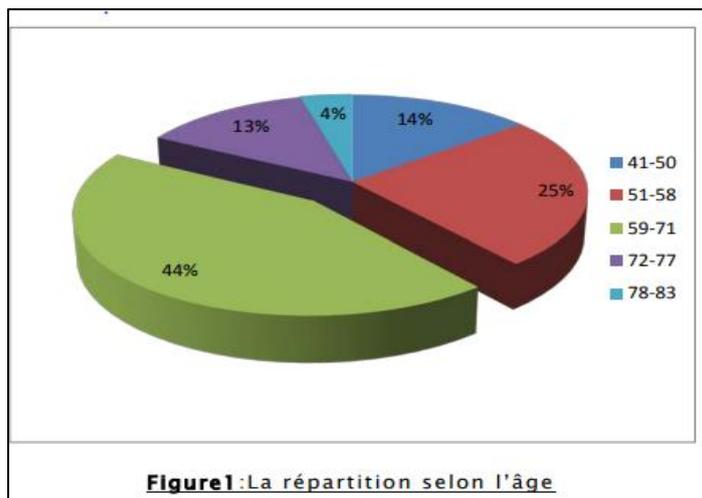
This was a retrospective study of 30 cases collected in our intensive care unit at the CHU Hospital in Marrakech over a period from 2020 to 2022. The patients included presented with suspected or certain COPD decompensation, depending on Anthony's criteria.

## RESULTS AND ANALYSIS

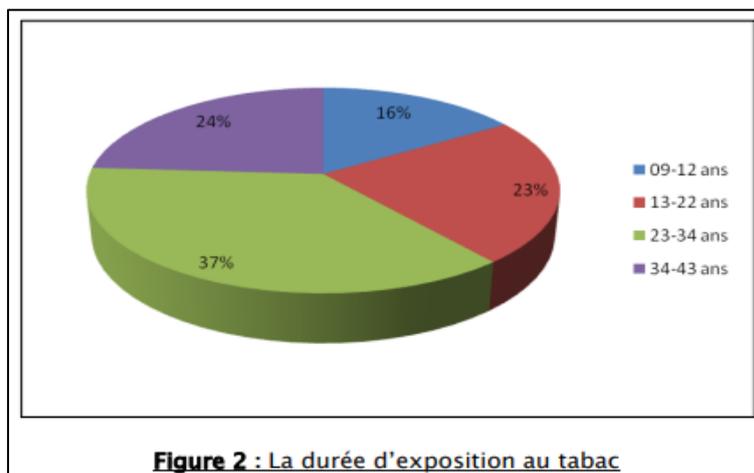
They were all men with an average age of 62. Smoking intoxication was present in 80% of cases. Exacerbations were of infectious etiology in 76% with 43% bronchial secondary infections and 33% pneumonia, and without identified cause in 15% of cases. Our patients were staged according to the GOLD classification. Stage 4 patients represented 63%, had more right heart failure (56%) and developed more exacerbations per year (4 on average) resulting in more intensive care hospitalizations (3 on average) while stage 3 patients 3 accounted for 36% of all patients. Drug treatment was dominated by antibiotics (in all patients) bronchodilators in 70% of cases and corticosteroids in 63% of cases. 80% of patients were on oxygen, 20% with long-term oxygen therapy. Ventilatory assistance was considered in 26% by means of non-invasive ventilation and 16% of patients required endotracheal intubation. The average length of

stay was 10 plus at least 2. In-hospital mortality was 20%.

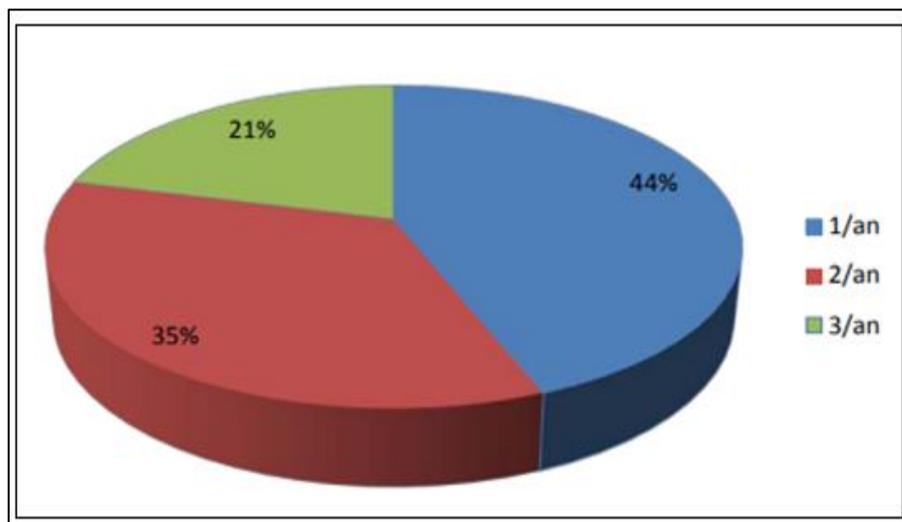
The age of the patients varies between 41 and 83 years with an average of 62 years.

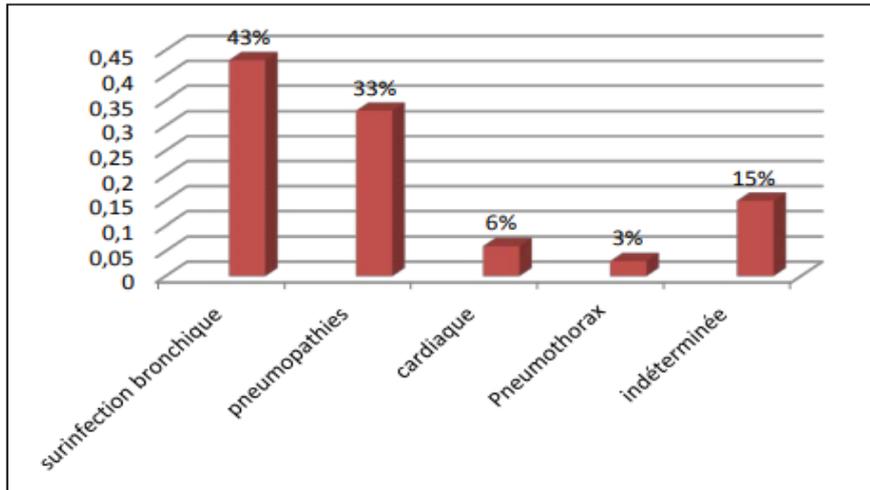


The duration of exposure to tobacco varies from 9 to 43 years.

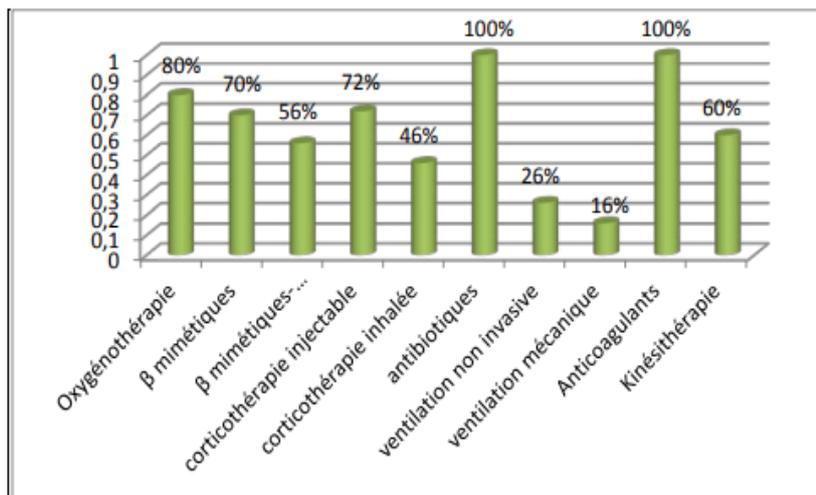


The number of hospitalizations does not exceed 3 per year.

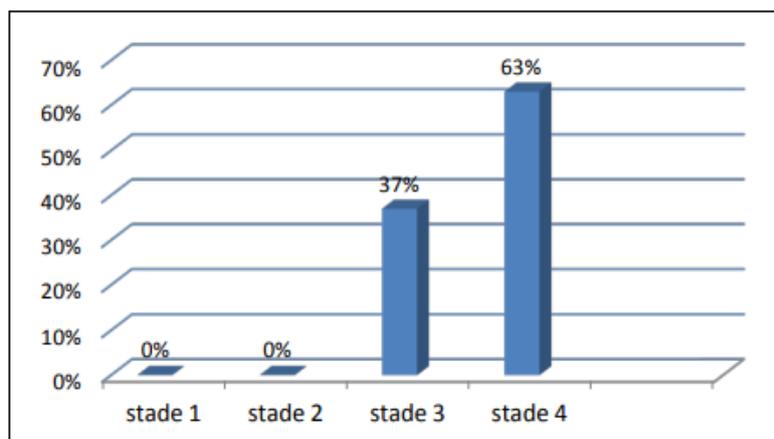




**Figure 4 : étiologies des décompensations**



**Figure 5 : Les moyens thérapeutiques au cours des décompensations de BPCO**



**Figure 7 : classification des patients selon GOLD**

## DISCUSSION

COPD is currently the fourth leading cause of death worldwide. Decompensations are estimated at two million annual cases in France. They are responsible for 40 to 60,000 hospitalizations [1]. Smoking is the main risk factor in our study in parallel with data from the literature. Indeed, smoking cessation decreases the fall in FEV1 and reduces mortality [2]. COPD decompensations do not have a universally recognized, simple and precise definition [3]. The most used criteria are increased dyspnoea, increased volume and purulence of sputum (Anthonisen's triad) [4]. These criteria were used to assess the severity of the episode, in order to choose the most appropriate care structure. Our patients hospitalized in the department had on admission signs of immediate clinical (respiratory distress) and gasometric (respiratory acidosis) severity. The search for a triggering factor is in all cases essential and must be carried out in parallel with the initiation of treatment. An etiology is found in a variable percentage of cases according to the series in the literature [5-7] but the infectious etiology remains the most common in most series including ours in more than half of the patients the germs often incriminated were *Streptococcus pneumoniae*, *Haemophilus influenzae* and in some cases were isolated: *Pseudomonas aeruginosa* and *Acinobacter baumannii* For weight bearing, it is the subject of many recommendations, and includes symptomatic treatment combining: rest, oxygen therapy to correct threatening hypoxemia and reduce the intensity of dyspnea [8] and mainly bronchodilators:  $\beta_2$ -mimetics and anticholinergics whose effect is comparable in functional terms [9], preferably in mask nebulizations. Systemic corticosteroids are sometimes indicated as a short course, but their systematic use is not recommended according to French learned societies and their benefits must be weighed against the existence of significant side effects, in particular hyperglycaemia and infection. Unlike the American recommendations which offer them almost systematically. And this trend was observed in our included patients. The presence of a focus of clinical or radiological pneumonia and/or marked purulence are elements in favor of the initiation of antibiotic therapy [10], even if the association between purulence and bacterial character remains controversial [11-13]. Its prescription concerned the majority of our patients based on amoxicillin-clavulanic acid with the addition of a fluoroquinolone guided in certain cases by cytobacteriological examinations of sputum (ECBC) or protected distal sampling for intubated patients. Indeed, according to several studies, the more the exacerbation shows signs of severity, the greater the benefit of antibiotic therapy on the clinical course. A meta-analysis by Quon *et al.*, Shows that antibiotic therapy significantly reduces treatment failures by 46% and mortality by 78%. Finally, in the most severe cases requiring ventilatory assistance, non-invasive ventilation is the first-line treatment, respecting its contraindications. Its demonstrated and

expected beneficial effects are as follows: improvement of ventilatory parameters and gas exchange (reduction of PaCO<sub>2</sub> and correction of pH), reduction in the frequency of recourse to intubation, reduction in the length of stay and mortality depending on the studies. At the end, it will be necessary to think about the initiation of means of prevention of exacerbations, namely: respiratory rehabilitation, long-term oxygen therapy:  $\beta_2$ -long-acting mimetics, inhaled corticosteroids, but above all follow-up in pulmonology in order to reassess the basic treatment and ensure smoking cessation.

## CONCLUSION

COPD decompensations are frequent pathologies, the morbidity, mortality and cost of which are considerable and set to increase. Care and regular follow-up are necessary to limit the number and severity of exacerbations and thus improve the prognosis.

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