sciendo Internal Medicine 2021 vol. XVIII No. 3 - www.srmi.ro 35
10.2478/inmed-2021-0165

CLINICAL AND DIAGNOSTIC IMPLICATIONS OF THE BRONCHIECTASIS - COPD ASSOCIATION

Ancuța Alina Constantin[1,2], Florin Dumitru Mihălțan[1,2]
[1]"Marius Nasta" Institute of Pneumology Bucharest
[2]"Carol Davila" University of Medicine and Farmacy Bucharest
Corresponding author: Ancuța Alina Constantin
E-mail:cetina_anca@yahoo.com

Abstract

The aim of this study is to provide partially updated data on observational, non-interventional research that aims to determine the potential clinical and diagnostic implications of the association of bronchiectasis in patients with COPD.

Both COPD and bronchiectasis are two chronic lung diseases with a high prevalence in the general population and can coexist in a large number of cases. Their coexistence is increasingly diagnosed in clinical practice, but this association has not yet been well studied. The overlap of these two pathological entities has been established as a unique phenotype, because patients are prone to more severe and frequent exacerbations. It is therefore important to identify and study the presence of bronchiectasis in patients with COPD, as the clinical, prognostic, and therapeutic implications are different.

***Materials and methods**. The study was based on a cohort of 100 patients (n) with a positive diagnosis of COPD, following the establishment of the 2 study groups as follows: patients who were identified to also associate the diagnosis of bronchiectasis (x), these being the second study group, the first group including the remaining COPD patients without bronchiectasis (n-x).*

Therefore, the study, conducted between 2018-2020, contains 100 patients who addressed the Marius Nasta Institute of Pneumoftiziology, Bucharest, managed and followed for 12 months after inclusion, according to the developed scientific research protocol.

Patients were included in the study after an anamnesis as complete as possible and subsequent completion of the informed consent form. The ethical aspects were respected by the existence of the agreement of the Ethics Commission of the Institute of Pneumoftiziology "Marius Nasta", Bucharest, for the study and by the presence of the informed consent of the patient (attached to each medical record / per hospitalized patient).

The comparative evaluation of the 2 groups of patients, group I (COPD) and group II (COPD and Bronchiectasis), consisted of periodic clinical-paraclinical monitoring (T0, T3, T6, T12), highlighting the negative impact of the presence of bronchiectasis in patients with COPD.

Results. *The study cohort includes 100 patients: group I - 38 patients (diagnosis of COPD) and group II - 62 patients (diagnosis of COPD + BE), 20% being female patients. The mean age of the patients was 65.26 years. The occurrence of "de novo" bronchiectasis was identified in 4.84% of patients. Lung lobes involvement was identified in patients in group II, COPD + BE confirmed, while patients in group I had no bronchial damage. The number of exacerbations was higher in patients with BCOS.*

The presence of infections with potentially pathogenic microorganisms and, in particular, with Pseudomonas aeruginosa, is a variable frequently associated with the presence of bronchiectasis in patients with COPD, being considered a predictor of mortality in these patients.

Discussions. *BCOS syndrome is a time and resources consumer, so early diagnosis is essential to improve patients' quality of life and increase survival.*

Conclusions. *COPD and Bronchiectasis are two conditions commonly encountered in current practice, with relatively similar clinical, pathophysiological and molecular consequences, and overlap syndrome has a higher risk of morbidity and mortality compared to each of the conditions taken separately. This study highlighted the negative impact of bronchiectasis in patients with COPD, clinically by increasing the number of exacerbations, affecting the quality of life, and reducing survival. Early identification of this phenotype, entitled BCOS in the literature, is necessary because therapeutic management is influenced by the particular clinical-paraclinical evidence of this new clinical syndrome.*

Although the data obtained in this paperwork were in absolute agreement with the data of other existing studies in the literature, the number of patients included in the study was not high enough, and the pandemic context of the COVID-19 that broke out in Romania in March 2020 had quite obvious negative repercussions on the course of the study.

Keywords: *BCOS, bronchiectasis, COPD, overlap syndrome.*

Rezumat

Scopul *acestui studiu este de a furniza date parțial actualizate cu privire la cercetarea observațională, non-intervențională, a potențialelor implicații clinice și diagnostice ale asocierii bronșiectaziilor la pacienții cu BPOC.*

Atât BPOC, cât și bronșiectaziile sunt afecțiuni pulmonare cronice cu o prevalență ridicată în populația generală și pot coexista într-un număr mare de cazuri. Coexistența lor este diagnosticată din ce în ce mai frecvent în practica clinică, dar asocierea nu a fost încă bine studiată. Suprapunerea acestor entități patologice a fost abordată ca un fenotip unic, deoarece

pacienții sunt predispuși la exacerbări mai severe și frecvente. Prin urmare, este important să se identifice și să se studieze prezența bronșiectaziilor la pacienții cu BPOC, deoarece implicațiile clinice, prognostice și terapeutice sunt diferite.

***Material și metodă.** Studiul s-a bazat pe o cohortă de 100 de pacienți cu diagnostic pozitiv de BPOC (n), divizați în două grupuri de studiu după cum urmează: pacienți care asociau diagnosticul de bronșiectazie (x) și pacienți cu BPOC fără bronșiectazie (n-x).*

Prin urmare, studiul, realizat în perioada 2018-2020, include 100 de pacienți care s-au adresat Institutului de Pneumoftiziologie Marius Nasta, București, au fost gestionați și urmăriți timp de 12 luni, conform protocolului de cercetare științifică dezvoltat.

Pacienții au fost incluși în studiu după o anamneză cât mai completă și completarea formularului de consimțământ informat. Aspectele etice au fost respectate prin acordul Comisiei de Etică a Institutului de Pneumoftiziologie „Marius Nasta", București, pentru studiu și consimțământul informat al pacientului (atașat fiecărei fișe medicale).

Evaluarea comparativă a celor două grupuri de pacienți, grupul I (BPOC) și grupul II (BPOC și bronșiectazii), a constat în monitorizarea clinico-paraclinică periodică (T0, T3, T6, T12), evidențiind impactul negativ al prezenței bronșiectaziilor la pacienții cu BPOC.

***Rezultate.** Cohorta de studiu include 100 de pacienți: grupul I - 38 pacienți (diagnostic de BPOC) și grupul II - 62 pacienți (diagnostic de BPOC + BE), 20% fiind femei. Vârsta medie a pacienților a fost de 65,26 ani. Apariția bronșiectaziilor „de novo" a fost identificată la 4,84% dintre pacienți. Implicarea lobilor pulmonari a fost identificată la pacienții din grupul II, BPOC + BE confirmată, în timp ce pacienții din grupul I nu au avut leziuni bronșice. Numărul exacerbărilor a fost mai mare la pacienții cu BCOS.*

Prezența infecțiilor cu microorganisme potențial patogene, și în special cu Pseudomonas aeruginosa, este o variabilă frecvent asociată cu prezența bronșiectaziilor la pacienții cu BPOC, fiind considerată predictor al mortalității la acești pacienți.

***Discuții.** Sindromul BCOS este consumator de timp și resurse, astfel încât diagnosticul precoce este esențial pentru a îmbunătăți calitatea vieții pacienților și a crește supraviețuirea.*

***Concluzii.** BPOC și bronșiectaziile sunt două afecțiuni întâlnite în mod obișnuit în practica actuală, cu consecințe clinice, fiziopatologice și moleculare relativ similare, iar sindromul de suprapunere prezintă un risc mai mare de morbiditate și mortalitate comparativ cu fiecare dintre condiții luată separat. Acest studiu a evidențiat impactul negativ al bronșiectaziilor la pacienții cu BPOC, prin creșterea numărului de exacerbări, afectând calitatea vieții și reducând supraviețuirea. Identificarea timpurie a acestui fenotip, intitulat BCOS în literatură, este necesară deoarece managementul terapeutic este influențat de dovezile clinico-paraclinice particulare ale acestui nou sindrom clinic.*

Deși datele obținute sunt în acord absolut cu rezultatele altor studii existente în literatura de specialitate, numărul pacienților incluși nu a fost suficient de mare, iar contextul pandemiei COVID-19 care a izbucnit în România în Martie 2020 a avut repercusiuni negative destul de evidente asupra cursului studiului.

***Cuvinte cheie:** BCOS, bronșiectazii, BPOC, sindrom de suprapunere.*

General data

Both COPD and bronchiectasis are two chronic lung diseases with a high prevalence in the general population and can coexist in a large number of cases[1]. Their coexistence is increasingly diagnosed in clinical practice, but this association has not yet been well studied. The overlap of these two pathological entities has been established as a unique phenotype, because patients are prone to more severe and frequent exacerbations[2]. Withal, it is known that they share a similar clinical-functional picture and an inflammatory profile dominated by neutrophils[3]. COPD is a common neutrophilic lung disease that affects approximately 5-10% of the population. It is characterized by functional changes (airflow obstruction). On the other side, bronchiectasis is a rarer neutrophilic lung disease, characterized by structural changes in airway caliber (dilation) that affect 0.1-0.5% of the population[4].

It is important to identify this phenotype early, entitled BCOS in the literature, as therapeutic management is influenced by the particular clinical-paraclinical evidence of this new clinical syndrome.

The prevalence of bronchiectasis in COPD patients is highly varied, mainly due to the inclusion criteria of patients, such as different GOLD stages and different definitions of bronchiectasis. The literature reports that the prevalence of bronchiectasis in COPD varies considerably, between 4% and 72% worldwide[5]. In patients with a primary diagnosis of COPD, identification of radiological bronchiectasis may have different implications, which may be a consequence of COPD, as in most cases, probably due to the "vicious cycle" of airway inflammation and repeated infections.

Materials and Methods

The study was based on a cohort of 100 patients (n) with a positive diagnosis of COPD, following the defining of the 2 study groups as follows: patients who were identified to also associate the diagnosis of bronchiectasis (x), these being the second study group, the first group including the remaining COPD patients without bronchiectasis (n-x).

Therefore, the study group included 100 patients diagnosed with COPD - 38% (n - 38) and with COPD + BE 62% (n - 62), selected from patients who addressed the Institute of Pneumoftiziology "Marius Nasta ", Bucharest, in the 2018-2020 period.

The inclusion criteria were:

- Existence of a chest CT or HRCT to confirm the existence of clinically and/or radiologically suspected bronchiectasis, performed on T0 stage;

Parameter	Whole Group	COPD	COPD with Bronchiectasis	p value
Subjects, n(%)	100	38 (38%)	62 (62%)	
Sex, n, M/F	80/20	28/10	52/10	
Age	65.27 (10.88)	64.16 (11.27)	65.95 (10.17)	< .001
Body Mass Index	26.37(5.80)	27.40(6.51)	25.74(5.28)	< .001
Smoking status, n(%)				
Active smoker, n(%)	42 (42%)	17 (44.7%)	25 (40.3%)	
Never smoker, n(%)	10 (10%)	1 (2.6%)	9 (14.5%)	
Former smoker, n(%)	48 (48%)	20 (52.6%)	28 (45.2%)	
PA	35.01 (22.76)	42.026(24.4)	30.71(20.006)	< .001
Noxious Exposure				
Exposure, n(%)	55 (55%)	26 (68.4%)	29 (46.8%)	
No Exposure, n(%)	45 (45%)	12 (31.6%)	33 (53.2%)	
COPD staging, n(%)				
1, n(%)	16 (16%)	2 (5.3%)	14 (22.6%)	
2, n(%)	37 (37%)	17 (44.7%)	20 (32.3%)	
3, n(%)	30 (30%)	12 (31.6%)	18 (29.0%)	
4, n(%)	17 (17%)	7 (18.4%)	10 (16.1%)	
COPD class, n(%)				
A, n(%)	9 (9%)	3 (7.9%)	6 (9.7%)	
B, n(%)	28 (28%)	11 (28.9%)	17 (27.4%)	
C, n(%)	11 (11%)	2 (5.3%)	9 (15.5%)	
D, n(%)	52 (52%)	22 (57.9%)	30 (48.4%)	
FEV1/FVC pred %	56.72 (11.81)	57.56 (11.24)	56.21 (12.21)	< .001
FEV1 pred %	53.25 (23.01)	49.04 (19.18)	55.82 (24.86)	< .001
Exacerbations	2.11 (1.269)	1.86 (1.089)	2.29 (1.368)	< .001
Hospitalisations	1.46 (0.613)	1.42 (0.607)	1.48 (0.626)	< .001
PPM detected, n(%)	26 (26%)	11 (28.9%)	14 (24.2%)	
P. aeruginosa, n(%)	18 (18%)	6 (15.8%)	12 (19.4%)	
BSI Score	10.49 (5.23)		10.49 (5.32)	< .001
FACED Score	2.83 (2.04)		2.83 (2.04)	< .001
CAT	20.95 (8.85)	21.76 (7.90)	20.45 (9.41)	< .001
SGQR	46.86 (20.15)	49.46 (19.15)	45.27 (20.74)	< .001
mMRC	2.58 (1.06)	2.63 (1.94)	2.54 (1.14)	< .001

Table 1. *General characteristics of the studied group*

- Presence of imagistic bronchiectasis and specific symptoms;
- Confirmed diagnosis of COPD;
- Patients included should be of legal age and sign informed consent after the purpose and procedures required in the protocol have been clearly explained to them.

The exclusion criteria were:

- Refusal to sign informed consent/ refusal to participate;
- Lack of confirmation with certainty of the diagnosis of COPD;
- Age under 18;
- The presence of radiological bronchiectasis without present clinical criteria;
- Pregnant or breastfeeding women;
- Bronchiectasis secondary to cystic fibrosis or other diseases (malignant diseases, etc).

The evaluation protocol included screening patients to establish medical history, assessing chronic treatment, vital signs, establishing anthropometric indices, smoking status, and complete clinical examination. The underwent investigations were: blood tests (ESR fibrinogen, leukocytes, eosinophils), respiratory functional tests, SGRQ questionnaires, CAT, mMRC, sputum microbiological examination, evaluation of evolution/adherence to treatment, the existence of complications, and prognostic scores (BSI and FACED).

Statistical analytics

Statistical analysis was performed using Microsoft Excel® and IBM SPSS Statistics Subscription, ordinal and scalar version 1.0.0.1447. Variables that showed statistically significant correlations in the univariate analysis and that presented $p < 0.01$ were considered eligible to be introduced in the multivariate analysis.

Results

The study cohort includes 100 patients distributed as follows: group I - 38 patients (diagnosis of COPD) and group II - 62 patients (diagnosis of COPD + BE). In group I, 26.31% (n - 10) are women, and in group II, 16.12% (n - 10) are women. The age of the patients varied between 38 and 86 years, with an average of 65.27 ± 10.88 years, with a higher frequency for the age group between 60-70 years. In group I, the average age was 64.16 ± 11.27 years, and in group II 65.95 ± 10.17 years (Table 1, Figure 1).

The occurrence of “de novo” bronchiectasis was identified in 4.84% (n - 3) of patients in group II.

Lung lobes involvement was identified in patients in group II, COPD + BE confirmed, patients in group I not showing lung damage.

Post-Tuberculosis affected lung lobes Crosstabulation

Count

		Affected lung lobes						
		0	1	2	3	4	5	Total
Post-Tuberculosis	Yes	0	0	1	1	7	2	11
	No	3	4	26	15	3	0	51
Total		3	4	27	16	10	2	62

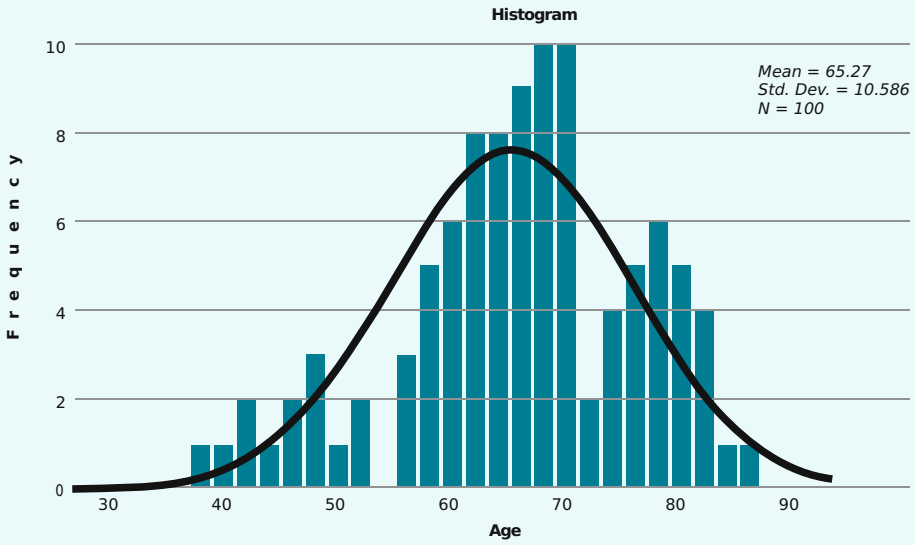

Figure 1. *Age distribution of the patient group*

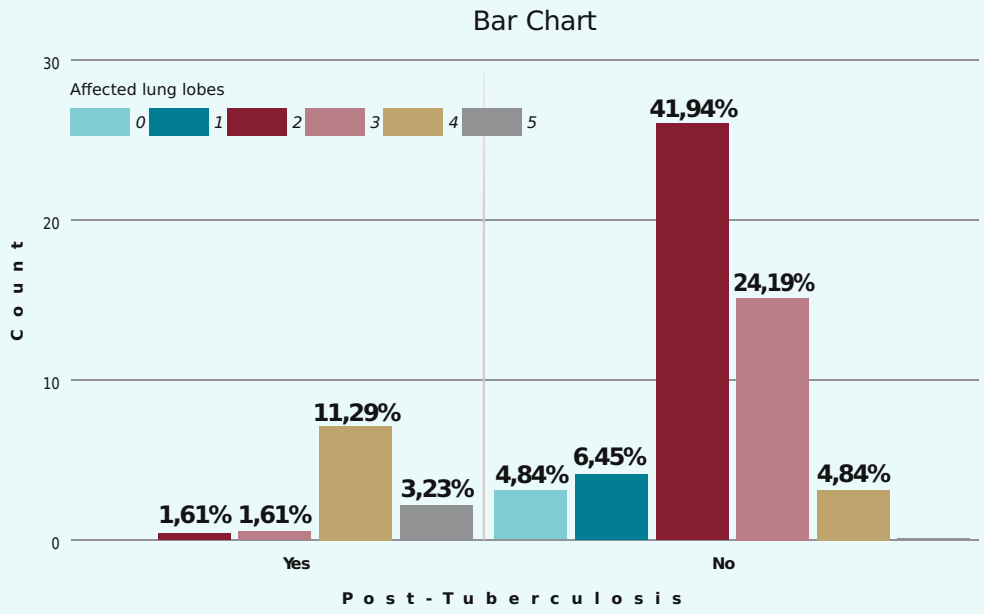

Figure 2. *The influence of the history of pulmonary tuberculosis on lung damage*

The number of affected lung lobes varied between 1 and 5, the predominant number of affected lobes being 5. It should be noted that for patients who developed BE "*de novo*" (n - 3), lung damage was visible starting with T6.
In patients with a history of pulmonary tuberculosis, a large number of affected lung lobes predominated, respectively four affected lobes in 11.29% (n - 7) and five affected lobes in 3.23% (n - 2) of patients with a history of tuberculosis (n - 11) (Figure 2).
The number of hospitalizations was carefully monitored in all patients included in the study, range from 0 to 3, with a whole group median of 1.46 ± 0.613 events. In the first group of patients (n - 38) the lack of hospitalizations (n - 19) predominated in half of the patients, only one patient with a maximum of 3 hospitalizations.
Similar to the first group of patients, for the patients of group II (n - 62) the lack of hospitalizations predominated in 51.6% of patients (n - 32). Unlike group I, a higher number of patients with COPD and associated bronchiectasis had a hospitalization of 24.2% (n - 15) or 2 hospitalizations of 22.2% (n - 14), a single patient with 3 hospitalizations (Figure 3). Thus, the number of hospitalizations was slightly increased for patients who also had associated bronchiectasis, however, the lack of hospitalizations predominated in both groups studied. The number of exacerbations ranged from 0 to 5 for all patients included in the study. It is important to take note that by exacerbation we understand the acute worsening of COPD symptomatology: heavy dyspnea, increased sputum production and cough, emphasized purulence.
In group I patients, an exacerbation was present in almost half of the patients, in a percentage of 47.1% (n - 18), followed by the number of 2 exacerbations in 21.2% of patients (n - 8) , only 3 patients showed no exacerbations and only one patient presented a maximum of 5 exacerbations during the study period.
Similarly, the predominant number of exacerbations in group II patients was also one in about one third of patients, in a percentage of 32.3% (n - 20), but more than a third of patients presenting more than one exacerbation (n - 28).
Comparing the two studied groups, an increase in the number of exacerbations can be observed in group II patients, so that in group II patients a percentage of 11.3% had four exacerbations compared to 5.3% in group I patients. Moreover, 6.5% of patients with COPD + BE experienced five exacerbations compared with only 2.6% in patients without BE (Figure 4). This suggests that the presence of bronchiectasis is a trigger and causes the increase of exacerbations an also worsend of its.
Most patients in group I did not have colonization with any potentially pathogenic

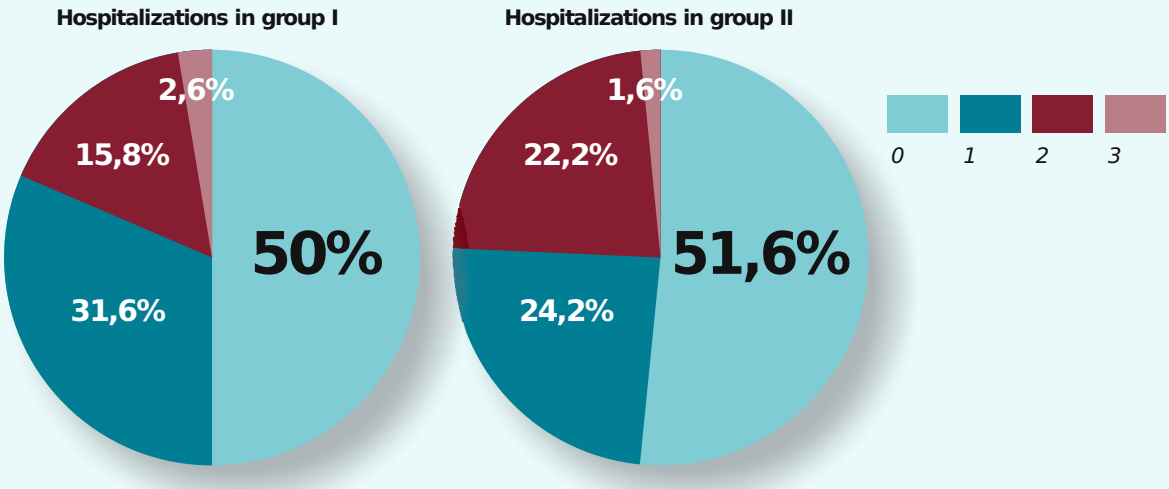

Figure 3. *Frequency of hospitalizations in patient groups*

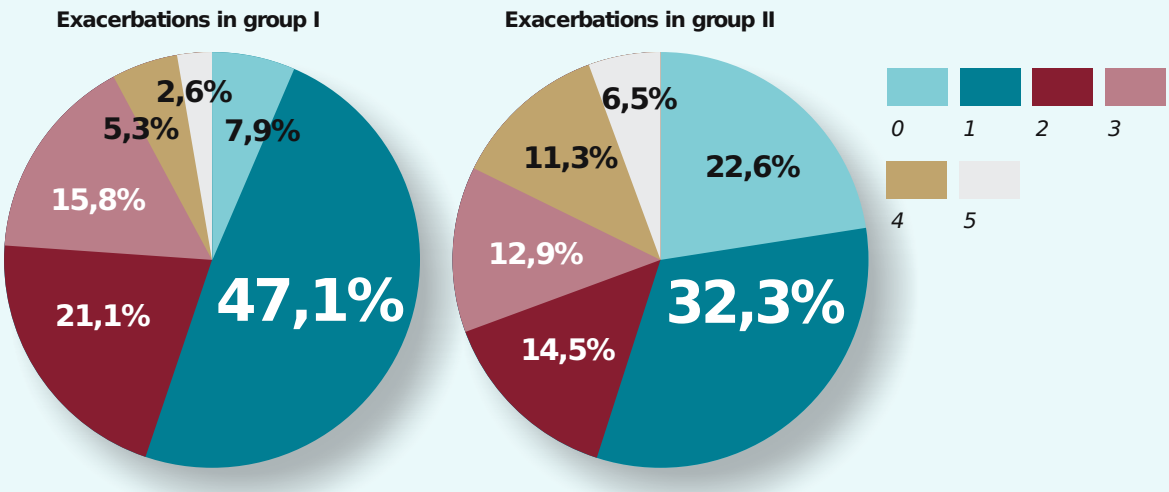

Figure 4. *Frequency of exacerbations in patient groups*

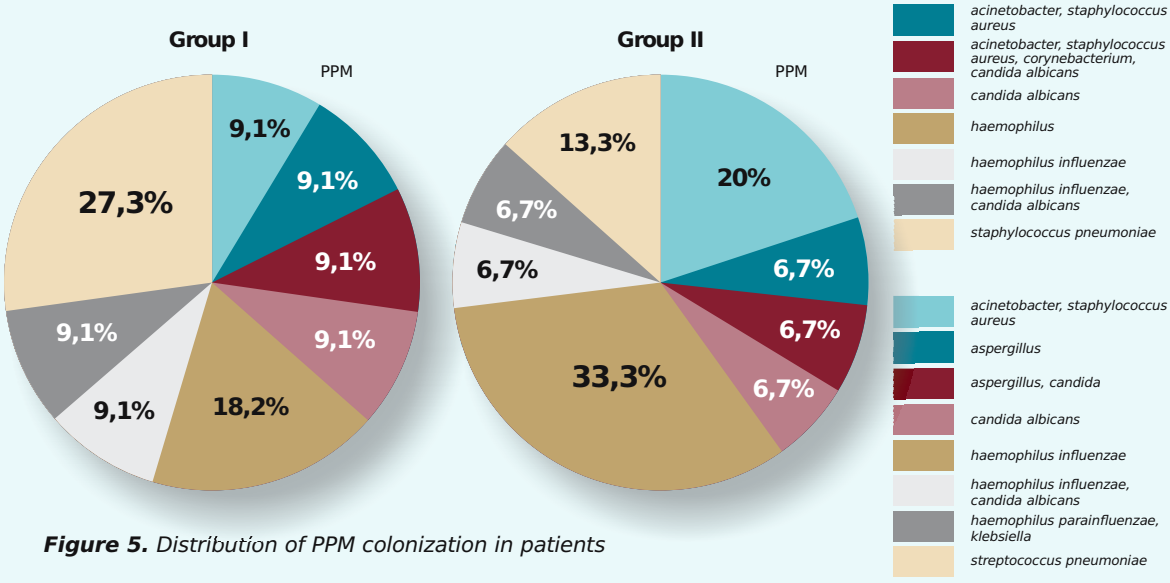

Figure 5. *Distribution of PPM colonization in patients*

microorganism (other than Pseudomonas aeruginosa), respectively a percentage of 71.1% (n - 27), the remaining 11 patients presenting colonization with one or more PPM. Similar to group I of patients, the absence of colonization with potentially pathogenic microorganisms (other than Pseudomonas aeruginosa) predominated in group II of patients, respectively a percentage of 75.8% (n - 47). The number of patients who had bacterial colonization with a single microorganism (n - 8) was approximately equal to the number of patients who had bacterial colonization with two microorganisms (n - 7).

The most common potential pathogenic microorganism encountered in the 11 colonized patients in group I was Streptoccocus pneumoniae (n - 3), in 27.3% of patients and Acinetobacter (n - 3). In group II patients, the predominant potential pathogenic microorganism was Haemophilus influenzae, in more than a third of patients (n - 7), being present both alone, in a percentage of 33.3% (n - 6) and along with other PPM, 6.7% (n -1).

In group I patients, Pseudomonas aeruginosa was detected in 15.8% of patients (n - 6), compared to group II, where it was present in a higher percentage, respectively in 19.4% of patients (n - 12). This increased prevalence of Pseudomonas aeruginosa colonization in patients with COPD and BE results in a more pronounced decline in lung function (Figure 6, Table 2), more frequent exacerbations, and mortality.

The St George Respiratory Questionnaires (SGRQ) and CAT (COPD Assessment test) show the extent to which COPD and COPD associated with BE affect quality of life (Table 3).

In group II patients, SGRQ values were higher in T3 - T12 than in group I, except for T0, which means that patients with overlapping syndrome have a lower quality of life than those with only COPD. SGRQ values decreased progressively from T0 to T12 for group I patients, while in group II they remained the same. In group II patients, CAT scores were higher in T3-T12 than in group I, except for T0. In both groups, CAT scores decreased steadily from T0 to T12. We can conclude that the presence of bronchiectasis in patients with COPD has a negative impact on quality of life.

The values of CAT and SGRQ scores in group II patients with colonization with Pseudomonas aeruginosa were higher compared to group I patients, so that 5 patients recorded in the CAT questionnaire values higher >20 and 2 patients values >30, out of 12 patients. Regarding the SGRQ questionnaire, it can be seen in Figure 2. that there were no patients colonized with Pseudomonas aeruginosa in either of the two groups with values lower than 20. Moreover, the patients in group II had a higher score compared to the patients in group I.

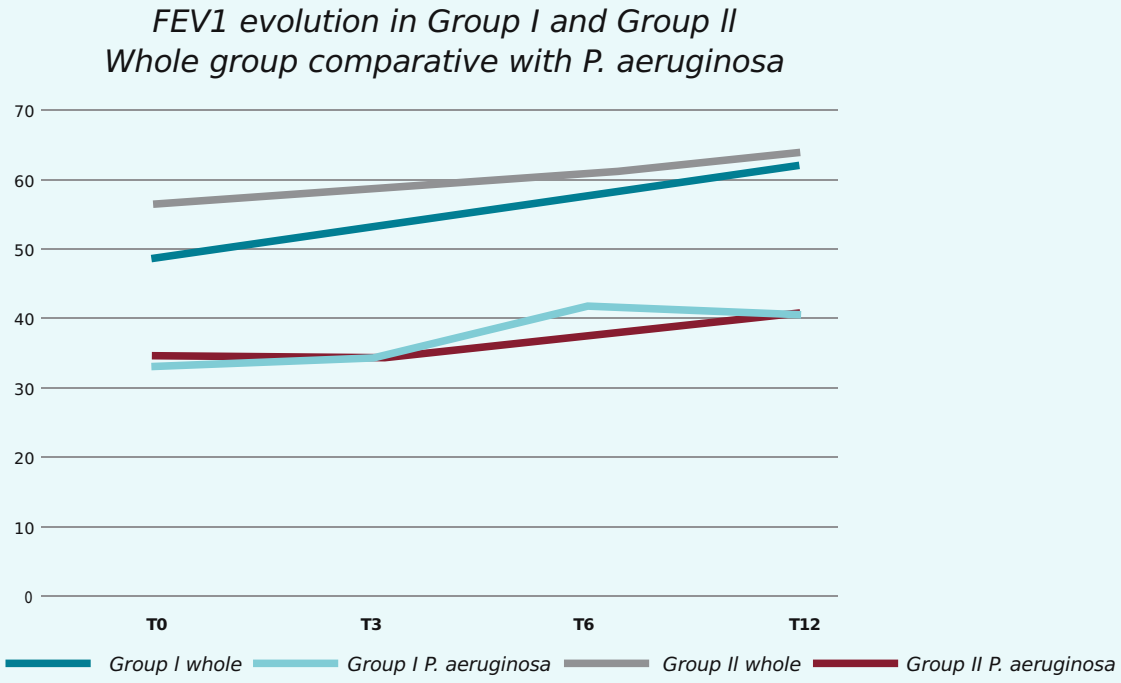

Figure 6. *FEV1 evolution in whole groups vs P. aeruginosa patients*

		Group I CAT score				
		<10	>20	>30	10-20	Total
Pseudomonas aeruginosa	YES	0	4	1	1	6
	NO	5	13	4	10	32
Total		5	17	5	11	38

		Group II CAT score				
		<10	>20	>30	10-20	Total
Pseudomonas aeruginosa	YES	2	5	2	3	12
	NO	14	16	12	8	50
Total		16	21	14	11	62

Table 2. *CAT scores in whole group vs. P. aeruginosa patients*

	T0	T3	T6	T12
SGQR Group I	49.46	44.80	44.64	43.86
SGQR Group II	45.27	46.52	47.11	46.07
CAT Group I	21.76	19.28	17.94	16.97
CAT Group II	20.45	20.01	19.57	18.39

Tabelul 3. *CAT and SGRQ on the two lots in the period T0 - T12*

This suggests that the accelerated decline in lung function in COPD + BE may be the result of chronic Pseudomonas aeruginosa infection, which can be ameliorated by the use of antibiotic therapy.

The analysis of the treatment administered to the patients included in the study generated detailed results in Figure 7 and 8 in which the applied therapeutic schemes are presented.

From the above graphs, it is observed that multiple therapies (5 or 6 combinations) were more common in group II patients, which means that the association of bronchiectasis with COPD aggravates the patient's condition.

As an overview, double therapy predominates in both groups during the 4 intervals, but we must consider the preponderance of triple therapy at T0, both in groups, as most patients present with an aggravated condition that requires complex drug management.

The most common combination is the double therapy LAMA + LABA with percentages of 20.96 (13), 27.41% (17), 27.11% (16) and 32.14% (18) for group II in the 4 quarters and percentages of 31.57% (12) , 31.57% (12), 31.57% (12) and 47.22% (17) for group I in the 4 quarters. The oral stimulant vaccine was administered to 23.68% of COPD patients and 67.74% of COPD + BE patients, even if all the guidelines had this recommandations for both type of diseases.

During the study period, the survival rate was 94.74% in group I patients and 90.33% in group II patients (Figure 9), most likely in the context of the accumulation of associated comorbidities and with the background of the functional decline of the COPD-bronchiectasis overlap.

Discussions

Chronic obstructive pulmonary disease (COPD) and bronchiectasis (BE) are some of the most common inflammatory respiratory diseases, of interest both individually and in association. The association between the two, BCOS syndrome, is of increasing interest in the medical world, being mentioned for the first time since 2002, by Barker[6]. However, there are not yet enough reports or evidence to show a possible causal relationship between COPD and BE that would lead to the onset of this syndrome and its subsequent developmental consequences.

A number of studies have shown an increased incidence of BCOS syndrome in males and patients aged 60 to 70 years[7, 8], the study presented confirming existing data in the literature. Thus, in this study, BCOS syndrome is predominant in males to the detriment of females and in the 60-70 age group. Based on previous studies, it can be speculated that BCOS syndrome may be a subphenotype of the infectious phenotype of COPD, characterized by chronic bronchial infection caused by potentially pathogenic

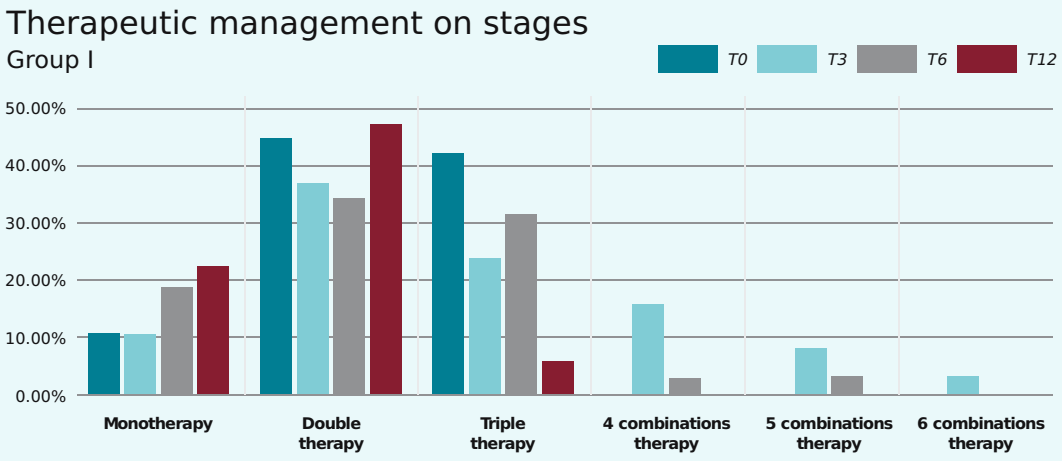

Figure 7. *Treatment management in patients with COPD*

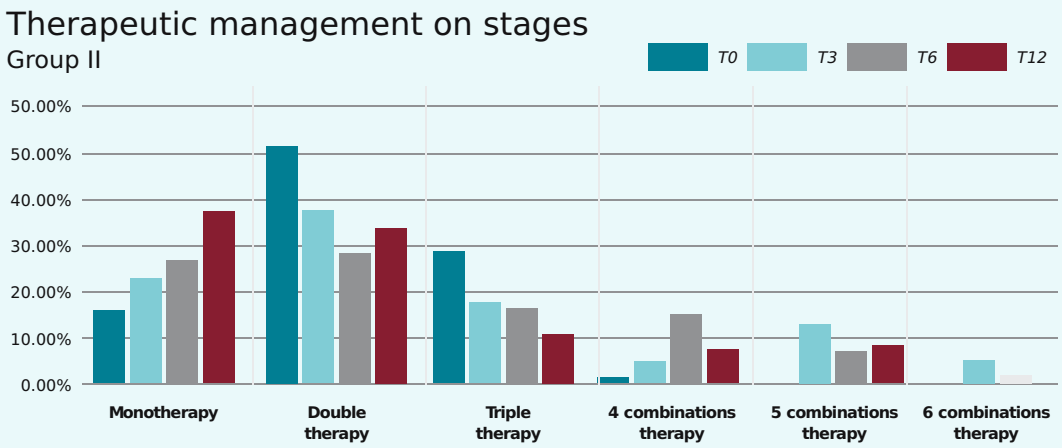

Figure 8. *Treatment management in patients with BCOS*

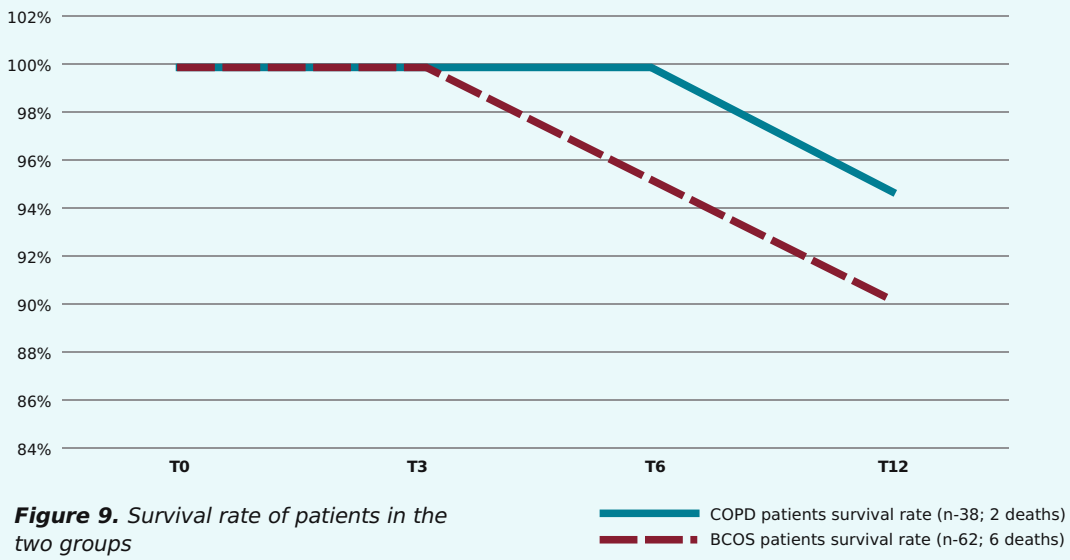

Figure 9. *Survival rate of patients in the two groups*

microorganisms and frequent bacterial exacerbations[9]. Some patients with COPD and an infectious phenotype may develop bronchiectasis, but others may be in the early stages of the disease and may be susceptible to certain therapeutic strategies aimed at suppressing bacterial growth and preventing bacterial persistence to prevent the development of bronchiectasis. The variable constantly associated with the presence of bronchiectasis in patients with COPD is chronic colonization by potentially pathogenic microorganisms, in particular Pseudomonas aeruginosa[10].

This study highlighted the link between chronic colonization by microorganisms and the development of bronchiectasis, especially in patients with a high bacterial load. The increased prevalence of Pseudomonas aeruginosa in patients with BCOS syndrome has led to a sharp decline in lung function, representing an aggravating factor and indicator of mortality for this group of patients.

The presence of bronchiectasis in patients with COPD is clinically transposed by lung damage, more precisely a very high percentage of patients included in this study, diagnosed with the BCOS phenotype, had damage to one or more lung lobes. This complements previous studies by other renowned researchers[10, 7] who have also shown that the presence of this phenotype causes damage to the lung lobes.

In the relatively recent past, basic regimens for the treatment of exacerbations and acute forms of bronchiectasis associated with chronic obstructive pulmonary disease were limited to bronchodilators, mucolytics, expectorants or antibiotics, which are also associated with physiotherapy[6].

However, recent advances have widened the field of knowledge regarding the etiology, pathophysiology or microbiology of bronchiectasis and, therefore, new methods have been developed for diagnosing and especially assessing the severity of the disease and its role. has the treatment with macrolide antibiotics or inhalers in the management and reduction of infectious exacerbations.

The most qualified patients who could successfully benefit from this treatment are, first of all, patients with COPD and associated bronchiectasis who have chronic colonization with Pseudomonas aeruginosa.

The quality of life of patients can be assessed using the CAT and SGRQ questionnaires, whose values provide a perspective on the improvement or worsening of patients' condition, lower values indicating a high quality of life. In the present study, CAT and SGRQ values in BCOS patients decreased significantly over the study period, which may suggest the effectiveness of the treatment administered.

On the other hand, the baseline values of these two questionnaires were higher in

patients with COPD and associated bronchiectasis compared to patients with COPD, which highlights the presence of bronchiectasis as a factor with a negative impact on quality of life.

Limitations

The limitations of the study were the relatively small number of patients included in the study as well as the numerical difference between the two groups of patients analyzed, making it more difficult to include more patients in the first group (COPD) with demographics somewhat similar to those of patients included in the study. second group (COPD + BE). Also, the outbreak of the COVID-19 pandemic in March 2020 in Romania, deeply disadvantaged the evolution of this study by stopping certain medical activities and prioritizing important and urgent activities at that time.

An important thing to consider for future studies is to increase the number of patients with COPD and associated BE, with various etiologies and different degrees of severity of the disease, in order to more concisely and more specifically assess the real benefits of applied therapy and to outline a new approach to this phenotype.

Conclusions

This study provides valuable and up-to-date information on the BCOS phenotype and its diagnostic management, with results comparable to existing studies in the literature at present. Moreover, emphasizes once again the importance of initiating in Romania a well-established and continuous diagnostic and therapeutic management program, the importance of permanent monitoring of patients, a national register, as well as thorough investigation of the efficacy and safety of already used and specific treatments, such as mucolytics, IV phosphodiesterase inhibitors, long-term macrolides and inhaled antibiotics, especially in more severe patients at high risk of exacerbations and chronic bronchial infection. We need to focus more on this combination of diseases because the survival and predicting factors for their evolution remains an important consequence and therapeutical target.

References

1. European Respiratory Journal Sep 2018, 52 (suppl 62) PA4092; DOI:10.1183/13993003. congress-2018.PA4092;

2. European Respiratory Journal Sep 2018, 52 (suppl 62) PA4093; DOI: 10.1183/13993003. congress-2018.PA4093;

3. Miguel Angel Martínez-Garcia and Katerina Dimakou, COPD and Bronchiectasis;

4. Tony De Soyza, Bronchiectasis- COPD Overlap Syndrome BCOS- it matters; anthony.de-soyza@ncl.ac.uk;

5. Miguel Angel Martinez-Garcia; Marc Miravitlles: Bronchiectasis in COPD patients: more than a comorbidity;

6. Barker AF, 2002; Parr DG, 2007; Shoemark A, 2007; Bilton D, 2008; Goeminne PC, 2010; Kung VL, 2010; Pasteur MC, 2010; Rademacher J, 2011; Altenburg J, 2015; Boyton RJ, 2016; Suarez-Cuartin G, 2016; Al-Jahdali H, 2017; Polverino E, 2017; Smith MP, 2017; Mitchell AB, 2018;

7. Martínez-García MÁ, Soler-Cataluña JJ, Donat Sanz Y, Catalán Serra P, Agramunt LermaM, Ballestín Vicente J, Perpiñá-Tordera M. Factors associated with bronchiectasis in chronicobstructive pulmonary disease patients. Chest. 2011;140:1130–7;

8. Tulek B, Kivrak AS, Ozbek S, Kanat F, Suerdem M. Phenotyping of chronic obstructivepulmonary disease using the modified Bhalla scoring system for high-resolution computed tomography. Can Respir J. 2013;20:91–6.

9. Matkovic Z, Miravitlles M. Chronic bronchial infection in COPD. Is there an infective phenotype? Respir Med. 2013;107(1):10–22;

10. Patel IS, Vlahos I, Wilkinson TM, et al. Bronchiectasis, exacerbations indices, and inflammation in chronic obstructive pulmonary disease. Am J Respir Crit Care Med. 2004;170(4):400–407.