Editorial

What Have We Learned About Bronchiectasis From RIBRON (Spanish Bronchiectasis Registry)?

Bronchiectasis is one of the most common chronic inflammatory airway diseases.1 It is characterized by a mixed (though predominantly neutrophilic) bronchial inflammatory pattern,2–4 usual chronic bronchial infection by pathogenic microorganisms,5 6 several exacerbations with an infectious profile7 and great clinical heterogeneity, since bronchiectasis can have more than one hundred aetiologies, both pulmonary and extrapulmonary.8 Up to less than two decades ago, there were no national or international management guidelines or registries for this disease anywhere in the world. Accordingly, the enormous lack of scientific evidence on its treatment led it to be considered an orphan disease. Even now, despite significant advances in our understanding of bronchiectasis and its therapy, and the publication of several specific guidelines and registries, some key aspects of the disease still remain unknown. In fact, many of the recommendations in the various guidelines continue to present evidence that does not go beyond an «expert consensus».8–11

The Spanish Society of Pneumology and Thoracic Surgery (SEPAR) has been a pioneer in the study of this disease. In fact, the first bronchiectasis guidelines in the world were published by SEPAR, in 2008 (later reissued in 2018),12 and these marked a significant advance in the management of the disease in Spain. Similarly, SEPAR also promoted the world’s first national bronchiectasis registry, a historical registry that was launched in 2002 and closed in 2011, after collecting cross-sectional data from more than 2000 patients in 36 Spanish centres.13 Thanks to this registry, we have been familiar with the peculiarities of bronchiectasis in our country for more than 20 years.

This was followed in 2015 by the ground-breaking creation of the Computerized Registry of Bronchiectasis (RIBRON), which is still active.14 The great advantage of this registry is that, in addition to collecting cross-sectional data, a greater number of variables and longitudinal data were also collected prospectively (it currently includes patients with data covering more than eight years of follow-up). This has allowed us not only to analyse how the fundamental characteristics of bronchiectasis differed in comparison to those recorded by the historical registry but also to better understand its natural history. At present, RIBRON contains data from more than 2800 patients, so it can be considered one of the largest national registries in the world (the world’s largest registry is the European EMBARC registry, with more than 17,000 patients, in which SEPAR has actively participated, mainly through patients also included in RIBRON).15

The scientific output of SEPAR’s bronchiectasis registries has been of enormous importance, via the analysis and subsequent publication in international journals of features related to various dimensions of the disease, including comorbidities and aetiological, clinical–functional, pathophysiological, diagnostic, microbiological, nutritional, prognostic and therapeutic aspects.

For example, a preliminary analysis of 2047 patients with bronchiectasis from the historical record established that, in Spain, the mean age of patients with this disease was 64.9 years, with 54.9% of them being women, and that the most frequent aetiologies were post-infectious (30% of cases) and idiopathic (22.4%).13 Moreover, it was observed that between 2002 and 2011 the diagnostic delay from the onset of symptoms was 12.2 years, this being more pronounced in women,16 while in the period 2015–2022 the diagnostic delay decreased significantly to 6.2 years and idiopathic aetiology also decreased (to 18%). These decreases could possibly be explained by the implementation of the Spanish guidelines for the management of bronchiectasis, and the clear algorithm for carrying out an aetiological diagnosis recommended therein.17 One crucial aetiological aspect was the finding that those patients with bronchiectasis who presented COPD as a comorbidity registered the highest mortality, despite not presenting a different microbiological profile.18

Another feature that has been studied extensively on the basis of data from RIBRON is peripheral biomarkers, both cellular and molecular. In the case of cellular biomarkers, various cluster studies have established that patients with neutrophilia19 or a higher neutrophil/lymphocyte ratio20 presented greater severity of bronchiectasis (according to the values of the validated multidimensional severity systems) and a greater number and severity of exacerbations. The role of the peripheral eosinophil count as a marker of severity and response to treatment has been closely examined. In this respect, a U-shaped relationship between the number of peripheral eosinophils and the severity of bronchiectasis was established for the first time in the literature in a large series of patients with bronchiectasis.21 Thus, both the presence of peripheral eosinopenia (less than 50 eosinophils/μL)22 and of eosinophilia (more than 300 eosinophils/μL)23 were associated with greater disease severity and more frequent exacerbations. Furthermore, it was observed, for the first time, that treatment with inhaled corticosteroids was effective in reducing exacerbations in bronchiectasis only in those patients with peripheral eosinophilia, even after excluding patients with asthma and other eosinophilic diseases.24 Meanwhile, the analysis of the role of peripheral eosinophils in
patients with bronchiectasis is still ongoing, based on data derived from the registry. When it comes to non-cellular biomarkers, the value of the peripheral C-reactive protein (CRP) concentration (especially with values higher than 4.2 mg/L) was associated with a greater risk of future exacerbations. Moreover, Wang et al. observed, using a cluster analysis, that the cluster with the greatest severity of bronchiectasis, according to the multidimensional grade system, presented a higher degree of markers of systemic inflammation, such as leukocytes, platelets, CRP, erythrocyte sedimentation rate, fibrinogen and lower values of lymphocytes, albumin and total protein concentration.

Finally, from a microbiological point of view, two studies based on the data provided by RIBRON have been especially important. On the one hand, the largest study to date on the impact of *Pseudomonas aeruginosa* (PA) infection on lung function decline was conducted in 849 patients with bronchiectasis and at least two spirometric studies, supported by a follow-up range of 1–4 years and the completion of more than 2200 tests. Patients with PA infection presented a greater decline in lung function than those without the isolation of this microorganism (−1.37% (52.1 mL) vs −0.37% (24.6 mL); p < 0.001).

On the other hand, García-Clemente et al. confirmed that PA is not the only microorganism that can cause an accelerated decline in lung function. Thus, chronic bronchial infection by *Staphylococcus aureus* could also be associated with spirometric impairment, as seen when such patients were compared with those in whom no pathogenic microorganism had ever been isolated (−1.19% (CI: −2.09, −0.69; p < 0.001) vs −0.02% (CI: −0.07, −0.01; p = 0.918)). In short, both the historical registry and, more particularly, the RIBRON registry of bronchiectasis have represented (and continue to represent) a very important advance in the understanding of this disease in our country. Longitudinal information continues to be collected, especially on important outcomes such as mortality and the effect of specific therapies.

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**References**