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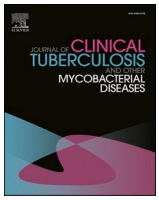

Editorial

Post-tuberculous bronchiectasis in adults: The never-ending story

Despite great advances in the prevention and treatment of tuberculosis all over the world, the truth is that its incidence and morbidity, as well as the sequelae it causes, continue to be very high, especially in countries with low economic and health resources. It is estimated that the incidence of tuberculosis is currently still more than 10 million individuals per year, and that between 140 and 170 million individuals in the world have suffered from it and still alive today [1,2]. Accordingly, the term post-tuberculosis lung disease has been coined as "*Evidence of chronic respiratory abnormality, with or without symptoms attributable at least in part to previous (pulmonary) tuberculosis*", affecting up to 50% of individuals who have suffered previous pulmonary tuberculosis (albeit within a wide range, depending on the country studied) [3] and being pulmonary rehabilitation one of its most important treatment [3–5].

One of the most important sequelae that pulmonary tuberculosis can produce, as part of this post-tuberculosis lung disease, is bronchiectasis (post-tuberculous bronchiectasis [postTB-BE]). It is usually diagnosed as a result of the appearance, years after suffering from pulmonary tuberculosis, of radiological images compatible with bronchiectasis and bronchial wall thickening as a result of predominantly neutrophilic inflammation [7] that appear in the same place as the previous tuberculosis infiltrates (on many occasions in the upper pulmonary lobes) and cause the patient to present characteristic symptoms of a productive cough and chronic bronchial infection by potentially pathogenic microorganisms [8–10], as well as multiple exacerbations of an infectious profile [11]. However, both tuberculosis and bronchiectasis are highly prevalent separately, so, in the case of any etiological doubt, it is necessary to carry out all the necessary etiological tests, especially those involving potentially treatable causes, before labelling bronchiectasis as post-tuberculous [6].

As a consequence of the close relationship between the prevalence of tuberculosis and the socioeconomic and health characteristics of the country in question (in addition to other factors such as average age, ethnicity, and contracting tuberculosis in a previous epidemics, the relative percentage of postTB-BE with respect to other etiologies is wide-ranging (depending on the area of the world), from being the primary cause of bronchiectasis to having a residual presence in etiological terms [6]. Fig. 1 shows the relative percentages of postTB-BE extracted from the most important national and international registries of bronchiectasis in the world [12–16]. As can be seen, its prevalence varies from 35.5% in India [16] to less than 5% in the United States [13], Australia [12], and Europe [14]. However, it is very likely that the percentage of postTB-BE varies significantly from one area to the next within large countries (such as Australia, the USA, and China) or in continents (Europe). In this respect, although we do not have data from specific areas of Australia or the USA, some localized data from China and, above all, Europe are available.

For example, a detailed country-by-country analysis of the EMBARC registry (European Registry of Bronchiectasis) [14], which includes information on almost 17,000 patients from 28 countries), showed that, although on average the percentage of postTB-BE was 4.9%, this percentage varied from 2.9% in the UK to 10.8% in Central and Eastern Europe, and from 8.5% in Southern Europe to 3.1% in Western and North Europe. In other words, a clear gradient is observed, with a higher prevalence of postTB-BE in those countries further to the east and south of Europe, undoubtedly due to the tuberculosis pandemics that struck them in the past, leaving these parenchymal lesions as a sequel decades later. Even within Europe, the two existing Spanish registries, two decades apart chronologically, allow us to assess the progression over time of postTB-BE. Thus, when comparing the historical registry [17], made up of data from slightly more than 2,000 patients with bronchiectasis included between 2002 and 2011, and the most recent computerized registry, with more than 2,600 patients included between 2015 and 2023 [18], a significant reduction in postTB-BE can be seen over these two decades, from 18.6% to 13.5%, $p > 0.001$. This decrease is probably due to progressive improvements in preventive and therapeutic measures for tuberculosis in this country (it is important to remember that several years may pass between a bout of tuberculosis and a diagnosis of clinically active secondary bronchiectasis).

Another paradigmatic example of a large country with significant variations in the percentage of post-TB-BE is China [19]. Studies from China (whose national registry has not yet published any official data) tend to make it difficult to analyze the etiology of bronchiectasis, for two fundamental reasons: on the one hand, they tend to include postTB-BE patients within the broader group of post-infectious bronchiectasis, without any differentiation, and, on the other, the percentage of idiopathic bronchiectasis in most Chinese series is enormously high (up to 70%). Thus, data from Shangdong [20] show that 16% of bronchiectasis has a post-tuberculous origin, although in 66% of cases it is classified as idiopathic, which may underestimate the real percentage of etiologies that should be known. Similar results have been observed in other large Chinese cities, such as Guangzhou [21]. The situation in the series from Latin America is similar, usually without any differentiation between postTB-BE and post-infectious bronchiectasis. Even so, the percentage of idiopathic bronchiectasis in the Latin American series is lower (around 30%) than that of the Chinese series, while the percentage for post-infectious bronchiectasis is higher (over 40%) [22].

Finally, the studies undertaken in the Middle East, Africa, and other parts of Asia, have been circumstantial, but it is very likely that the relative prevalence of postTB-BE is high, especially in the most disadvantaged areas. Thus, while Al-Harbi [23] found, in a study carried out

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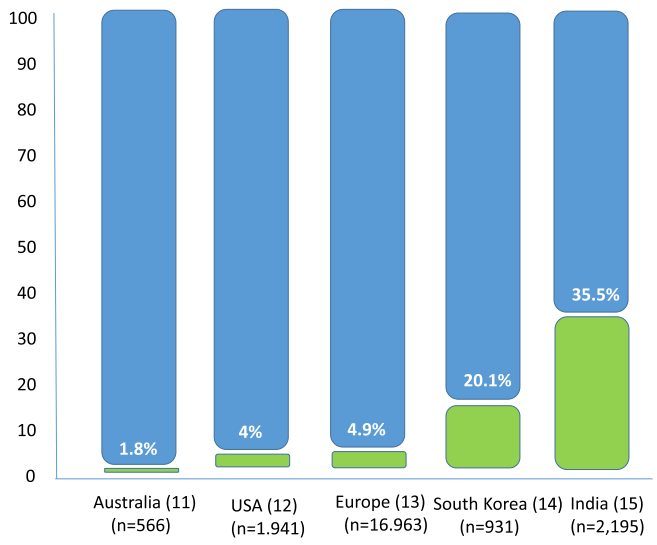

Fig. 1. Relative percentage of post-tuberculous bronchiectasis from data from published national and international registries in the world.

in Saudi Arabia (Riyadh), a 43% incidence of postTB-BE in a series of 301 patients with bronchiectasis, Huang et al. [24] observed only 12.4% in a series of 15,729 patients in Taiwan, although the latter study was extracted from administrative databases, with the methodological deficiencies typical of this type of source.

Unfortunately, there is no personalized management of postTB-BE separate from that of other more frequent etiologies, probably because there is little difference in its clinical, microbiological, and prognostic characteristics [6]. The radiological location (postTB-BE is more frequent in the upper pulmonary lobes) is the most differentiating aspect, but this circumstance does not imply any specific therapeutic management. Therefore, the best therapeutic approach continues to be preventive measures against tuberculosis to avoid future cases [1,2,25] especially in countries with previous pandemics or precarious socioeconomic situations. Unfortunately, despite great advances in the prevention and treatment of tuberculosis, it is still far from being on the road toward eradication and continues to produce a large number of sequelae, including bronchiectasis itself, so the prevalence of postTB-BE is not expected to decrease in the coming years (it may even increase as a result of the greater survival of patients with tuberculosis) [6]. Without a doubt, the worldwide eradication of tuberculosis is one of the most urgent challenges facing medicine today.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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