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Letter to the Editor

What has been researched about MDR-*Candida auris*? A bibliometric analysis on the 'new kid on the block' in hospital-associated infections

Sir,

Recently, *Candida auris* has emerged as a multidrug-resistant pathogen, being now a notorious healthcare-associated yeast causing invasive infections with high rates of clinical treatment failures [1]. *C. auris* is a novel ascomycetous yeast species isolated from the external ear canal of an inpatient in a Japanese hospital in 2008 [2]. This pathogen is associated with nosocomial infections [1] and it has a high associated fatality rate due to massive infections [3] and its virulence (related to its ability to germinate, adhere to host cells, secrete enzymes such as phospholipases or to form biofilms like other *Candida* species) [4–6]. The list of countries that have been affected by this ascomycetous organism is growing, now including Japan, India, UK, USA, South Korea and even in Latin America with Venezuela and Colombia [7], recently reported, among others [2,8–10]. Then, a question around this emerging mycosis is how much has been researched and published internationally so far, about it.

Then, a bibliometric analysis was done, using available information retrievable in two of the major biomedical and multidisciplinary journal-indexing data bases to assess the status of *C. auris*-related literature worldwide. Medline (using Gopubmed®) and Scopus were examined by using the term "*Candida auris*" as the main search operator so we could collect data on indexed articles.

There are 61,283 *Candida* related articles indexed in Medline up to March 1, 2017. *C. auris* represents just 0.06% (37 articles) of them. Almost half of them were published in the last 3 years (Fig. 1A). Top countries with more publications are India (21.6%), Netherlands (13.5%), USA (10.8), Brazil (8.1%) and Spain (5.4%) (Fig. 1), corresponding to institutions in Delhi (16.2%), Nijmegen (13.5%), São Pablo (8.1%), among others (Fig. 1A).

Considering the journals where these articles were published, corresponded mainly to Emerging Infectious Diseases (3) (from the US Centers for Disease Control), the Journal of Clinical Microbiology (3) (from the American Society of Microbiology) and Clinical Infectious Disease (2) (from the Infectious Diseases Society of the America).

At Scopus, we found 72 articles. From this total, similar findings were found, with most articles published after 2014 (Fig. 1B). Netherlands (21), India (19), USA (18), Brazil (12) and UK (7) were the countries with more publications (Fig. 1B). The top three institutions with publications on *C. auris* indexed at Scopus were the Nijmegen Interdenominational Hospital Canisius-Wilhelmina (Nijmegen, Netherlands) (17), followed by the Vallabhbhai Patel Chest Institute (New Delhi, India) (13) and the Radboud University Nijmegen Medical Centre (Nijmegen, Netherlands) (11).

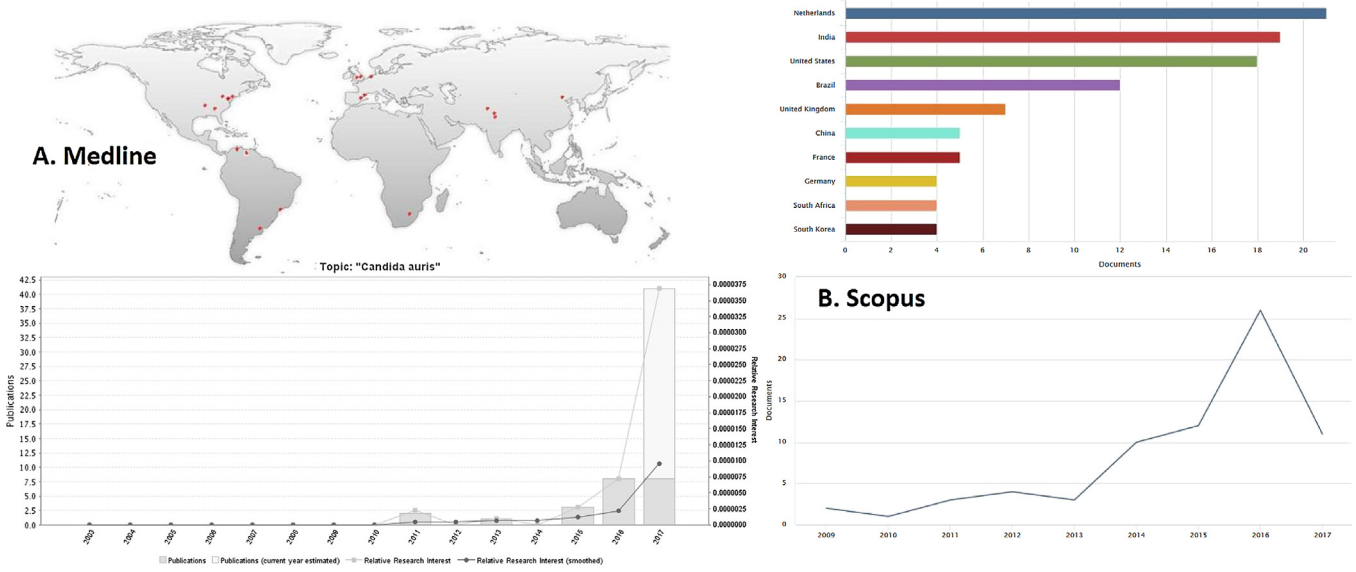

Fig. 1. Research trends and its geographical origin, from 2009 to 2017, on *Candida auris* at Medline (A) and Scopus (B).

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As far as we are concerned about *C. auris* as a threat, we also can realize now with the current findings, that still there is a lack in the research on this emerging pathogen [1–6]. An issue noticed is that half of the publications came out during the last 3 years, which can be explained by the difficulty of differentiating it from *Candida haemulonii* species complex [11]. This bibliometric assessment clearly indicates the needing of more research on this *Candida* species.

In conclusion, the potentially devastating impact of invasive infections caused by *C. auris* calls on not underestimate its infections as well to improve the knowledge of its global epidemiology, management and prevention [1], which can be achieved and/or supported by more medical research in the field.

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Competing interests

None declared.

Ethical approval

Not required.

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Alfonso J. Rodriguez-Morales *
Juan A. Sabogal-Roman
Carlos A. Alvarez-Moreno
Public Health and Infection Research and Incubator Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira, Pereira, Risaralda, Colombia
Clínica Universitaria Colombia, Colsanitas, Facultad de Medicina, Universidad Nacional de Colombia, Bogotá, D.C., Colombia

* Corresponding author at: Faculty of Health Sciences, Universidad Tecnológica de Pereira, La Julita, Pereira 660003, Risaralda, Colombia.
E-mail addresses: arodriguezm@utp.edu.co, ajrodriguezmmd@gmail.com (A.J. Rodriguez-Morales).

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