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Severe fever with thrombocytopenia syndrome – A bibliometric analysis of an emerging priority disease

Severe fever with thrombocytopenia syndrome (SFTS) is a recently emerged arboviral systemic disease, of acute onset and limited clinical evolution [1]. SFTS is a potentially lethal condition with a case-fatality rate (CFR) of 2.5%–30%. The SFTS virus (SFTSV) was discovered on 2009, in rural areas of China [2,3]. Later was reported in Japan and South Korea (2012), but has been also described in Dubai and United Arab Emirates. Experts, including the World Health Organization (WHO) [4], have expressed concern regarding its potential expansion to other countries in Asia as well to other regions in the world, due to travel and migration from endemic areas [3].

This syndrome is caused by a novel bunyavirus, SFTSV [5] in the family Bunyaviridae, genus Phlebovirus [6]. SFTS is considered a threating emerging infectious disease [1,2], mostly affecting working farmers, in rural areas with presence of ticks such as *Haemaphysalis longicornis*, *Ixodes nipponensis*, *Amblyomma testudinarium* and *Rhipicephalus microplusm*, among others [2,3]. Given its rapid clinical progression, with a period of severe disease around the 6th and 7th day post-infection, high suspicion of travel medicine practitioners as well infectious diseases physicians, is relevant. Nevertheless, around clinical manifestations as well as regarding epidemiological, biological and immunological aspects, there is still a clear need for more research.

In order to assess the global scientific research on this emerging arboviral disease, a bibliometric analysis [7] was conducted using available information deposited at major journals-indexing databases, such as Science Citation Index (SCI), Scopus and Medline. As our search strategy, data on indexed articles was retrieved from those databases using the term “severe fever with thrombocytopenia syndrome” as a main operator.

A total of 3227 SFTS-associated items were retrieved in our search, till April 5, 2018. From Scopus, 1749 articles were recovered (24.9% from United States, 14.4% China and 8.6% Japan), followed by Medline with 832 articles (53.4% China, 14.4% Japan and 13.3% South Korea) and SCI with 646 articles (33.5% China, 23.2% United States and 11.8% Japan) (Table 1). The 2017 was the year with highest production at Scopus (11.8%) and SCI (18.4%). At Medline it was on 2016 (12.7%).

Although, in a general context, the number of articles published about SFTS is not high, the H index for this topic is 91. Cardinally, the most cited article specifically addressing SFTS in the literature has received 463 citations in Scopus and 432 at SCI, which along with our findings through network analysis, clearly reveal the imperative need to increase international cooperation to overcome the current weakness prevailing in SFST research networks. Liang MF and the University of Texas Medical Branch are the top cited author and institution, respectively (Fig. 1).

Through our study, China leadership in SFTS global research (14.2% of the total) clearly stands up, most probably since it was in this country where the virus was originally isolated. Other countries, as those located in Asia (Japan and South Korea) have also increased their scientific output in recent years owing their new outbreaks. United States with a 24.5% of the scientific contributions has begun to increase its production efforts in this area due to the potential risk that this represents globally.

Table 1
Top twenty countries with scientific production on SFTS research at Scopus (up to April 5, 2018).

Rank	Country	Number of articles
1	United States	428
2	China	248
3	Japan	148
4	Germany	106
5	India	88
6	France	83
7	Italy	79
8	United Kingdom	69
9	South Korea	68
10	Canada	66
11	Taiwan	42
12	Netherlands	38
13	Switzerland	38
14	Australia	35
15	Spain	35
16	Turkey	33
17	Greece	31
18	Thailand	28
19	Brazil	22
20	Pakistan	20

On February 2018, WHO releases its list of priority pathogens that have the potential to cause a public health emergency [4], given that for them there is no, or is insufficient, countermeasures, such as drugs and vaccines that help control outbreaks. SFTS was discussed and considered for inclusion in the priority list, given the fact that poses a major public health risks and further research and development is needed, including surveillance and diagnostics, as has been evidenced in this bibliometric analysis.

As WHO warned, SFTS should be watched carefully and efforts in research should lead to a better understanding and evidence-based information that would mitigate this emerging arboviral disease.

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Conflicts of interest

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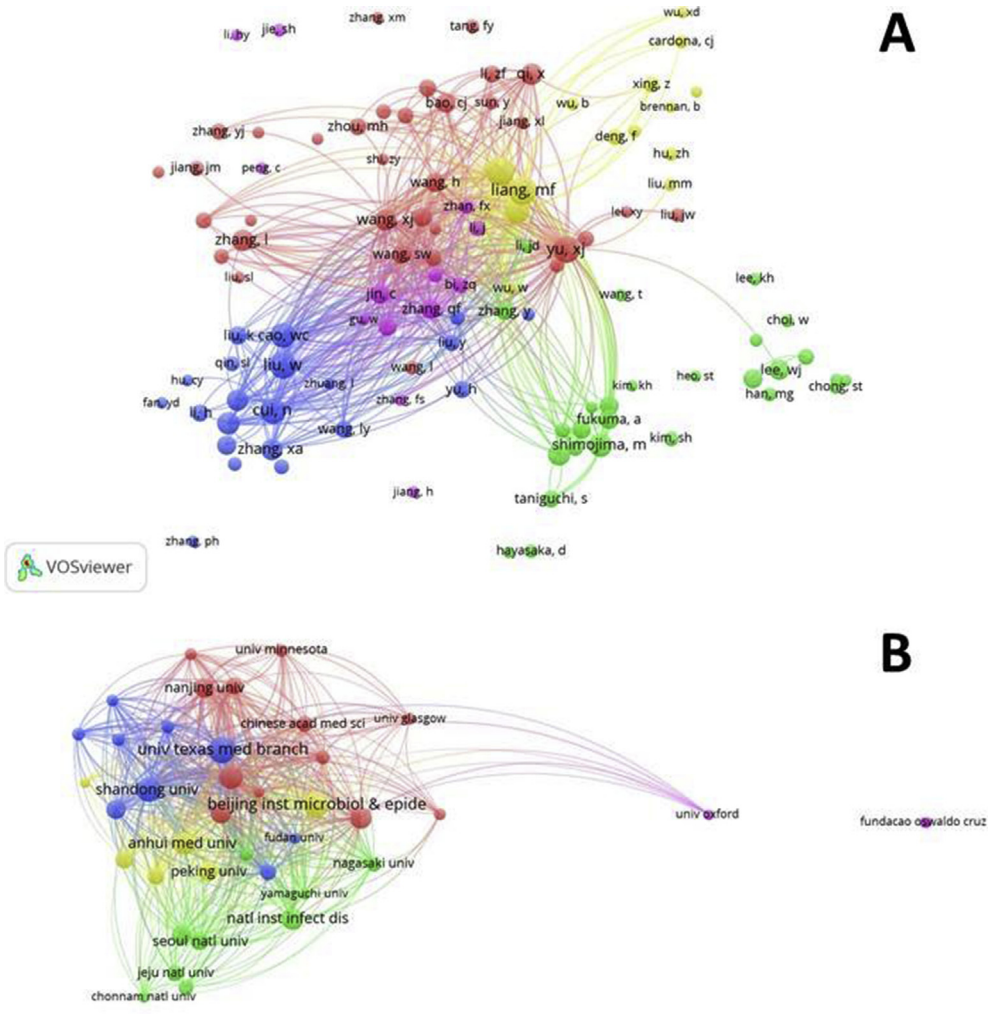

Fig. 1. Top cited authors (A) and organizations (B) publishing on SFTS, SCI. Analyses made with VOSviewer (open access software).

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