Anthrax-based Epidemiological Surveillance in Western Mexico

Sir,

Anthrax is a zoonotic disease caused by *Bacillus anthracis* that mainly affects mammals, including humans. It has estimated an annual incidence of 20,000–100,000 cases worldwide[1] and has long been considered to be a Third World disease, due to the lack of effective health systems and scant investment in anthrax-based surveillance programs. Implementing effective surveillance strategies to prevent and minimize the risk for anthrax infection, propagation, and harm to the population must be considered in endemic countries.

We analyzed 47 dead livestock animals coming from animal slaughterhouses in Western Mexico during 2014–2016. At the time of the medical evaluation, they presented dyspnea, staggering, convulsive movements, trembling, and collapse. They were necropsied at the Regional Animal Health Laboratory following the considerations as previously described.[2,3] A postmortem macroscopic examination for anthrax diagnosis was carried out by certified medical veterinary personnel, following the guidelines of the anthrax identification protocols of the Office International Epizootes.[4] No anthrax infection was observed, although the cause of death was associated to different diseases [Table 1]. Likewise, we analyzed 346 biological samples from patients with suspicious of gastrointestinal anthrax infection admitted to medical units of the Department of Health, Colima State, Mexico. Upon admission, symptoms had begun 3–5 earlier, with chills and fever (38°C–39.5°C; age range, 6–55 years old), painful swallowing, stomach pain, bloody diarrhea, vomiting, hoarseness, and neck glands. A polymerase chain reaction assay for the *B. anthracis* capsule production was carried out as previously described[5] with some modifications. None of the patients had anthrax infection.

Our results presented herein showed that no anthrax infection was observed. Although our findings suggest that there is no anthrax transmission, the emergence of livestock-associated diseases is a challenge that should not be ruled out [Table 1]. To date, there are two only anthrax reports in Mexico[6,7] in which natural outbreaks and an intentional release through the postal service were observed. Both reports are real-life scenarios of the potential risk that we are exposed to; therefore, the implementation of anthrax-based surveillance programs should be considered national priority, especially due to the constant flow of people through global travel, immigration of animal species, importation of meat industry products, demographic growth, and increased urbanization that brings about greater human interaction with the environment. Interestingly, the anthrax surveillance is not considered in the National Epidemiologic Surveillance Programs (NOM-017-SSA2-2012; NOM-046-ZOO-1995) of the Mexican Departments of Human and Animal Health. Thus, it is possible that cases of anthrax may have gone unnoticed, due to the lack of surveillance strategies. An effective anthrax-based surveillance would strengthen timely response capacities in the face of emergent anthrax outbreaks and would identify the vulnerable areas that should be provided with preventive strategies for controlling emergent anthrax infections.

In conclusion, our observations suggest that there is no anthrax transmission in the studied population. Anthrax-based surveillance programs would help for understanding both the transmission dynamics and geographic distribution in our region as well as to determine the real panorama of anthrax transmission in human and animal populations in Mexico.

Table 1: Necropsies-based results of the analyzed livestock

	Positive cases
Bovine (*n*=28)	
Anthrax	0
Rabies	12
Mannheimia haemolytica	1
Intestinal clostridiosis	1
Intestinal parasitosis	1
Clostridium chauvoei	1
Babesiosis	2
Unknown	10
Caprine (*n*=10)	
Anthrax	0
Rabies	1
Hemonchus parasite	1
Gastrointestinal nematodes	3
Intestinal parasitosis	4
Unknown	1
Ovine (*n*=9)	
Anthrax	0
Gastrointestinal nematodes	2
Pasteurellosis	2
Teniasis	1
Intestinal parasitosis	2
Conidiobolomycosis	1
Unknown	1

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Conflicts of interest

There are no conflicts of interest.

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