

Changed epidemiology of anthrax and molecular characteristics of *B. anthracis* in Inner Mongolia Autonomous Region, China

yan hai¹, wenrui wang², hua yue², weidong guo³, jian song³, han song³, yugeng zhang³, xiaofeng jiang³, xiuhong zhang³, zhenjun li³, wei li³, xudong liang³, runlin han³, jianchun wei³, and Zhiguo Liu⁴

¹ College of Veterinary Medicine, Inner Mongolia Agriculture University

²Inner Mongolia Autonomous Region Center for Comprehensive Disease Control and Prevention

³Affiliation not available

⁴National Institute for Communicable Disease Control and Prevention, Chinese Center for Disease Control and Prevention

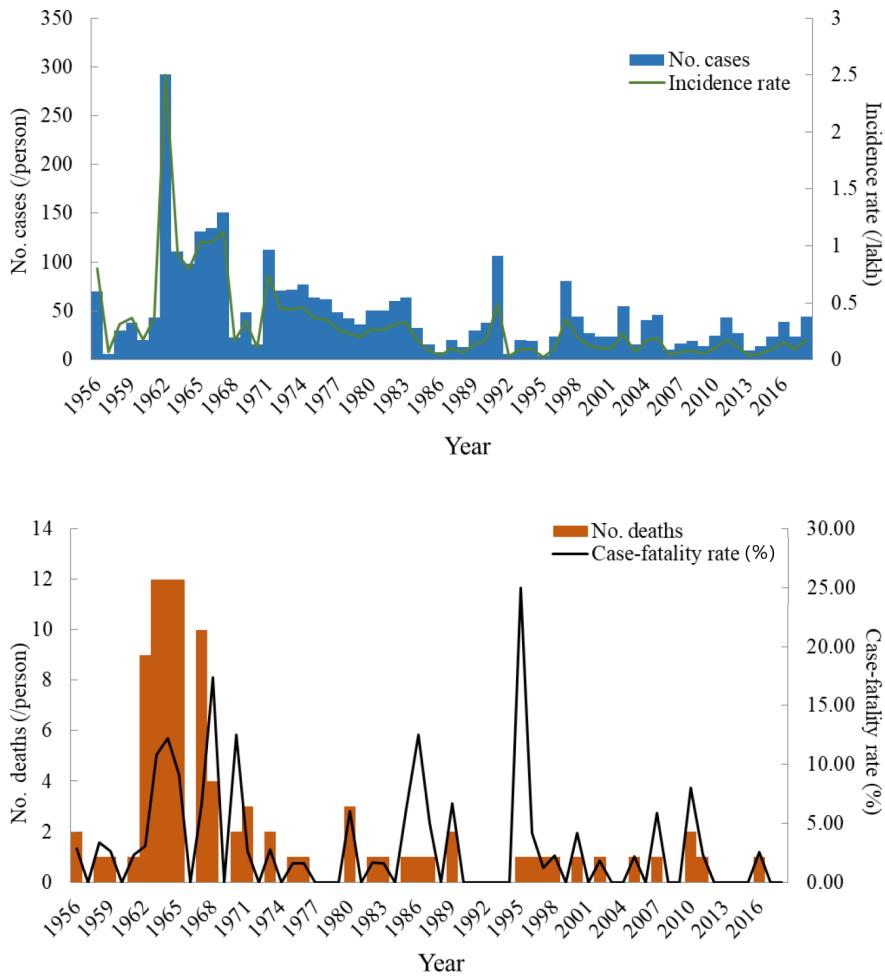
July 7, 2020

Abstract

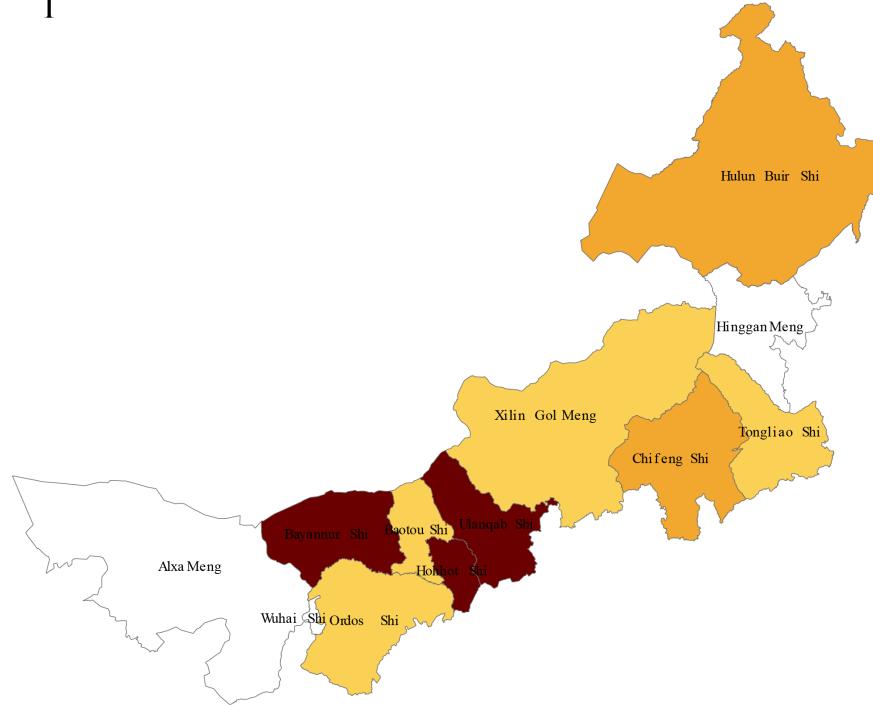
Anthrax is a natural foci disease in Inner Mongolia, which poses a severe threat to public health. In this study, the incidence number, rate, and constituent ratio were used to describe the epidemiological characteristics of anthrax in the region from 1956–2018. The molecular correlation and genetic characteristics of the strains were investigated using canonical single-nucleotide polymorphisms (CanSNP), multiple-locus variable-number tandem repeat analysis (MLVA-15), and whole genome sequencing (WGS). The epidemiological characteristics of anthrax in Inner Mongolia have altered significantly. The incidence was decreased annually, the regional distribution of anthrax gradually transferred from central and western regions to the eastern. Moreover, the occupation distribution was evolved from multiple early occupations to predominated by farmers and herdsmen. This indicates that reformulate the control and prevention strategies is essential. Both A. Br. Ames and A. Br. 001/002 subgroups were the predominant CanSNP genotypes of *Bacillus anthracis* in Inner Mongolia. A total of 36 strains constituted six shared MLVA-15 genotypes, suggesting an epidemiological link between the strains of each shared genotype. The six shared genotypes ((GT1, 9, 11, and 15) and (GT8 and 12)) consisting of 2–7 strains confirmed the occurrence of multiple point outbreaks and cross-regional transmission caused by multiple common sources of infection. Phylogenetic analysis based on the core genome showed that strains from this study formed an independent clade (CIII), suggesting a common origin. Moreover, *B. anthracis* showed a high genetic similarity with strain from Japan and South Korea, the strains from this study may be originated from Japan.

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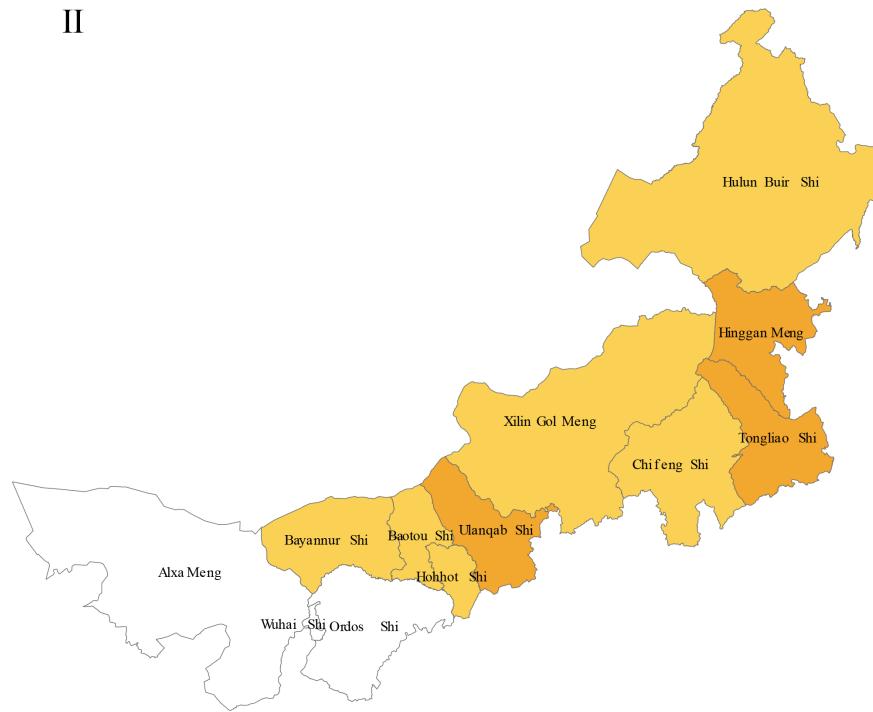
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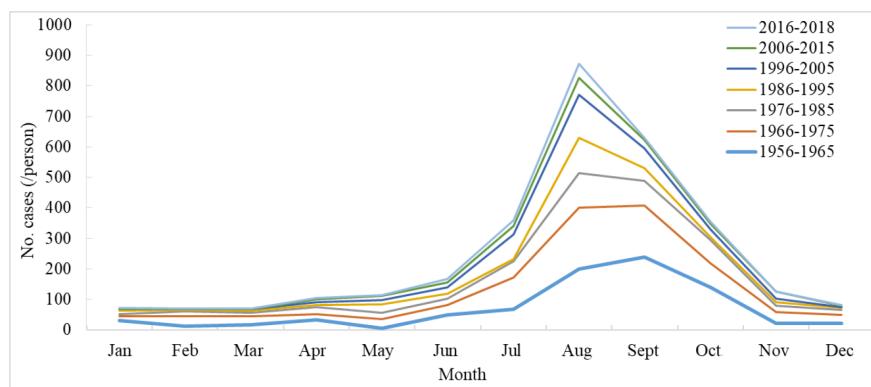
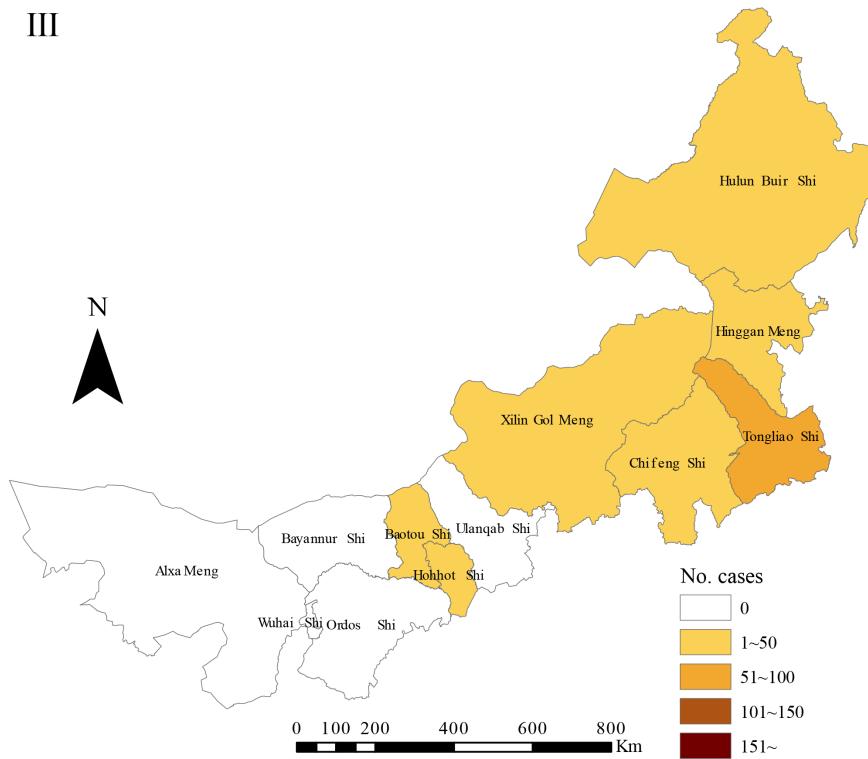
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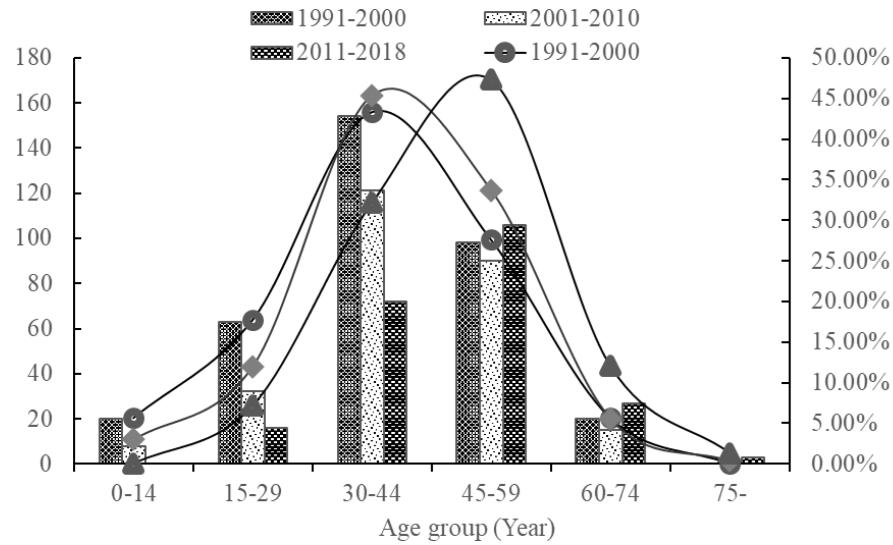


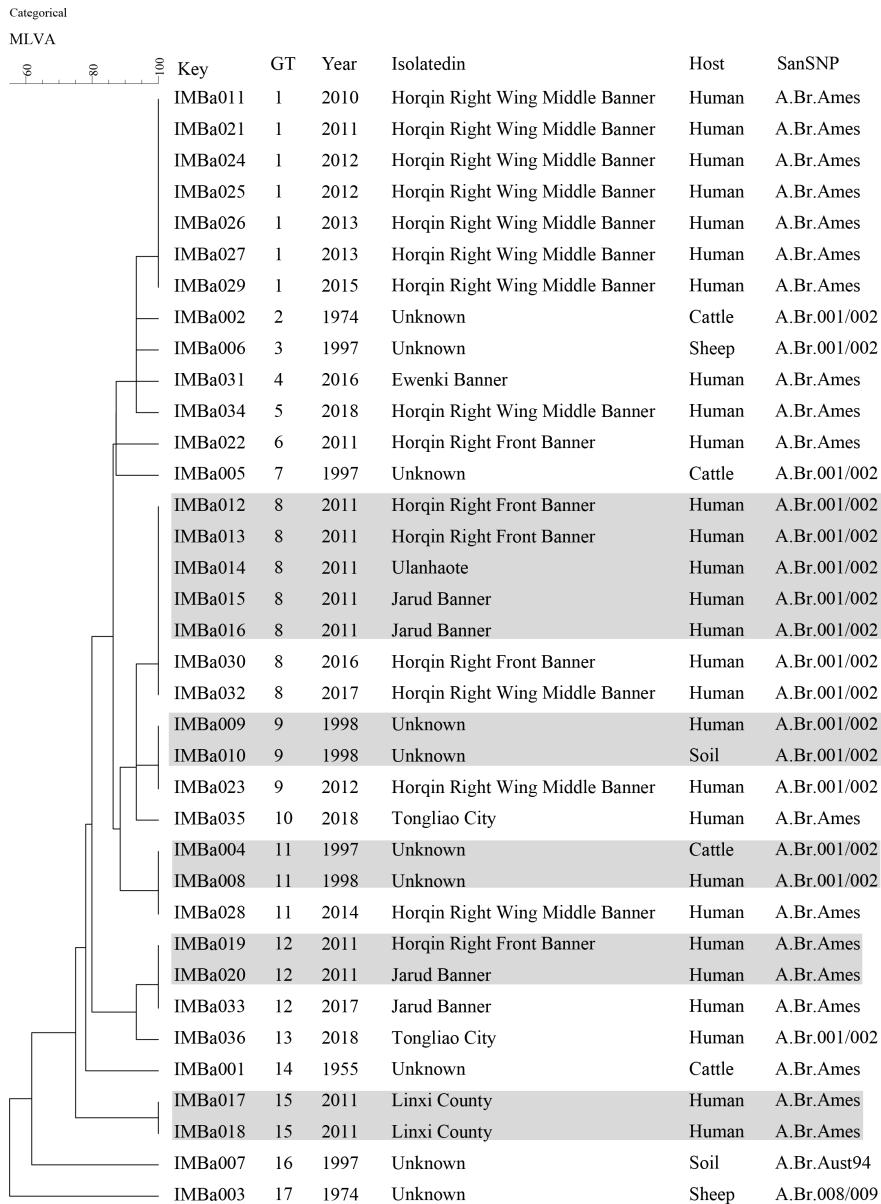
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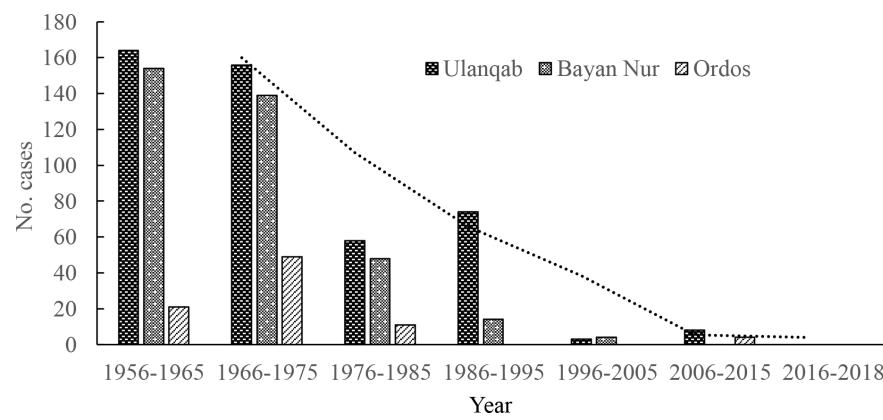
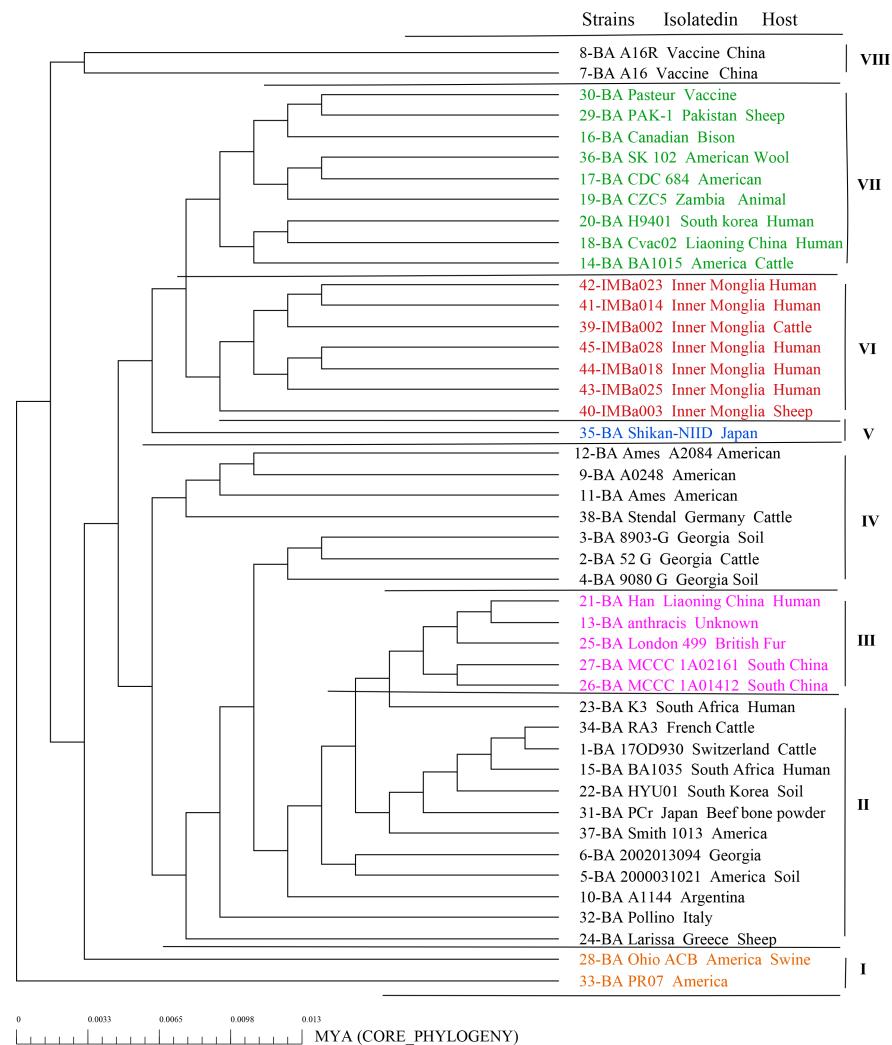


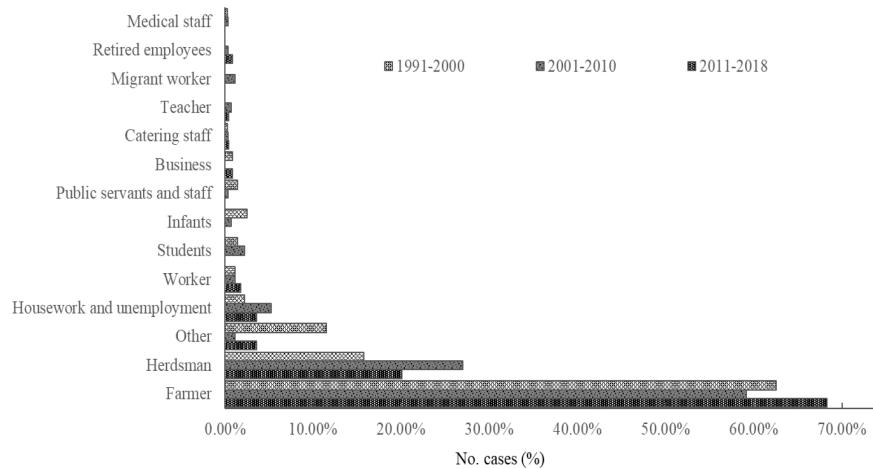
III











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