

## SHORT COMMUNICATION ΒΡΑΧΕΙΑ ΔΗΜΟΣΙΕΥΣΗ

# Reemergence of plague A note on septicemia and transfusion practice

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Επανεμφάνιση της πανώλης: Μικροβιαμία  
και πρακτική των μεταγγίσεων

Περίληψη στο τέλος του άρθρου

**Key words:** Blood transfusion, Plague, Reemergence

### PLAGUE AND YERSINIOSIS

Plague is a very old disease, which has been recorded throughout history. It is a bacterial infection caused by the Gram negative bacterium *Yersinia pestis*.<sup>1-4</sup> The infection has been known for more than 2 millennia. The “black death” is the name given to the well-known pandemics of plague, last seen in Europe during 1890–1894.<sup>5,6</sup> It is accepted that plague is a fatal disease which needs to be controlled. In the present day, this disease is under surveillance, following the global policy declared by the World Health Organization (WHO). Sporadic epidemics of plague have been continuously reported since the end of World War II.<sup>7,8</sup> Apart from plague, there are also other problematic forms of Yersiniosis,<sup>9,10</sup> including *Yersinia enterocolitica* infection, *Yersinia pseudotuberculosis* infection and other minor infections,<sup>9,10</sup> which are a focus of infectious medicine at present.

The latest reemergence of plague, in this millennium, occurred in the area of Sanjiangyuan, Qinghai in China.<sup>11</sup> In this outbreak, there were 9 confirmed infected cases and 3 deaths, but many thousands of suspicious cases in the population in that problematic area were included in a quarantine program. The disease surveillance team finally

found that the origin of the disease was a marmot which was eaten by a dog. After the dog's infection and death, its owner was discovered to have acquired the infection.

In this specific short paper, the author discusses presence of the *Yersinia* pathogen in blood, and related concerns about transfusion practice.

### SEPTICEMIA: PRESENCE OF PATHOGENS IN THE BLOOD

Generally, the zoonosis of plague starts from either insect bite, direct contact with infected animal tissue or inhalation of contaminated secretion from the infected animal's respiratory tract.<sup>1-4</sup> The latter route of transmission is the main route of human to human transmission.<sup>1-4</sup>

Generally, the incubation period of plague is about 2–6 days. Bubonic plague, with limited lymph node involvement, is the mildest form of infection, but more severe infections can be seen. The presence of the pathogen in bloodstream can be detected, and this is called septicemic plague.<sup>12,13</sup> This condition is associated with shock and disseminated intravascular coagulation. Septicemia is common in pneumonic plague, the most serious form of plague and that which was seen in the recent reemergence of plague in China.<sup>11</sup> It is reported that the morbidity and mortality in cases with septicemia is very high, with the death rate being as high as one third.

In cases of plague with septicemia, the hematological changes seen in severe bacterial infection may be present, the most important of which include leukocytosis, neutrophilia and toxic granulation.<sup>1-4</sup> The standard bacterial culture can be helpful in confirming the diagnosis.<sup>1-4</sup>

### REEMERGING *YERSINIA* PLAGUE IN CHINA; A CAUSE OF CONCERN FOR BLOOD SAFETY AND PROTECTION FROM *YERSINIA* SPECIES

The reemerging *Yersinia* plague in China is the most recent emerging disease of the world. Although the situation is now under control, consideration of the implications of *Yersinia* infection is one of the present topics of concern in medicine. In transfusion medicine, although this is not specific to plague, there is no doubt that the *Yersinia* species can be contaminants in blood, and transfusion-

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induced infection has been confirmed.<sup>14,15</sup> In the present era of emerging diseases, special concern for the blood safety regarding new pathogens, and not only the *Yersinia* species, is indicated. The screening for the emerging pathogens in donated blood is recommended in view of the special situation of reemergence of infection and the present threats of bioterrorism. New polymerase chain reaction (PCR) based tests are being developed and these are mentioned for their future usefulness in screening in transfusion medicine.<sup>16,17</sup>

## ΠΕΡΙΛΗΨΗ

### Επανεμφάνιση της πανώλης: Μικροβιαμία και πρακτική των μεταγγίσεων

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Η πανώλη είναι παλαιά νόσος προκαλούμενη από το αρνητικό κατά Gram βακτηρίδιο *Yersinia pestis*. Η πλέον πρόσφατη επανεμφάνιση σημειώθηκε στην Κίνα το 2009 και απαιτεί τη δέουσα προσοχή των γιατρών παγκοσμίως. Οι συγγραφείς συζητούν τη μικροβιαμία και την πρακτική των μεταγγίσεων υπό το πρίσμα της επανεμφάνισης της νόσου.

**Λέξεις ευρητηρίου:** Επανεμφάνιση, Μεταγγίσεις, Πανώλη

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