Deaths Associated With Japanese Encephalitis, China, 2005–2010

To the Editor—Japanese encephalitis (JE), a devastating and neglected disease, is the leading cause of viral encephalitis in rural areas of tropical and temperate Southeast Asia and Western Pacific regions [1–4]. Historically, JE was pandemic in China. Since China’s long-term nationwide immunization program began in the 1970s, the number of JE cases has declined substantially. However, numbers of deaths and mortality ranked 2–6 and 4–8, respectively, in 26 group A and B notifiable communicable diseases reported by the Chinese Center for Disease Control and Prevention [5]. Recently, transmission of JE had a few changes, such as the declining incidence and expanding natural foci, owing to national immunization, effective vector control, irrigation of rice agriculture, and changes in climate, sanitary and socioeconomic conditions [6, 7]. Few studies described epidemic characteristics of JE deaths in China. Understanding the disease burden and status is essential to the target for JE control by 2015 [8].

To explore the nationwide epidemic characteristics of JE deaths, data of individual deaths and mortality from 2005 to 2010 were collected from the National Notifiable Disease Surveillance System. A total of 1531 deaths occurred in China during the study period (56.3% male and 43.7% female). The difference of mortality between sexes was significant ($\chi^2=15.30$, $P<.001$), with female higher than male. Age of death ranged from 2 months to 84 years with a median age of 5 years (lower quartile $Q_1$ of 4 days and upper quartile $Q_3$ of 12 years). Children dominated the death load with 78.25% deaths younger than 15 years of age. Being grouped by age in 10-year intervals showed that mortality increased with age (Cochran-Armitage trend test, $z=13.06$, $P<.001$) with persons >70 years showing a rate of 14.67%, which may be related to complications of chronic diseases and lower levels of immunization in elderly persons. The time from illness onset to death varied, with a median of 6 days ($Q_1$, 4 days and $Q_2$ of 9 days). A total of 32.07% of patients who died lived in urban areas whereas 67.93% lived in rural areas. Most patients (88.24%) died within 2 weeks of illness onset.

Deaths had a widespread and heterogeneous distribution over 683 counties of 26 provinces, mainly concentrating in southwestern China and Henan Province. The 4 provinces with highest reported deaths include Guizhou (23.45%), Yunnan (11.56%), Sichuan (11.30%), and Henan (10.19%), accounting for 56.50% of reported deaths. Nationwide, the mortality, at a county level, ranged from 0.00% to 66.67%. Interestingly, mortality of persons (12%) from other countries was higher than that of local residents (5.77%), which indicated that careful assessment of outdoor activities, awareness of mosquito-borne diseases, decision on vaccination, and precautions of illness onset were essential to reduce the risk of JE for travelers from nonendemic areas to endemic areas [9, 10].

In conclusion, the study depicts epidemic characteristics of JE deaths throughout China. This information will be useful for management of JE for local health authorities, and especially for foreigners from other countries. The presence of encephalitis of unknown origin, particularly in children, when traveling to or residing in a high-risk region in peak mosquito season should alert health professionals to the possibility of JE.

Notes

Financial support. This work was partly supported by the National Basic Research Program of China (2012CB955500-955504) and National Natural Science Foundation of China (81102169).

Potential conflicts of interest. All authors: No potential conflicts of interest.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

Liya Wang,1† Wenyi Zhang,1† Fan Ding,2 Hai long Sun,1 Shuangping Yu,1 Shenlong Li,1 Ze liang Chen,1 Li yu Huang,1 and Chengyi Li1

1Institute of Disease Control and Prevention, Academy of Military Medical Science, Chinese Center for Disease Control and Prevention, and 2Institute of Health Service and Medical Information, Academy of Military Medical Sciences, Beijing, People’s Republic of China

References


*L.-Y. W. and W.-Y. Z. contributed equally to this work.

Correspondence: Cheng-Yi Li, Institute of Disease Control and Prevention, 20 Dong-Da St, Fengtai District, Beijing 100071, PR China (licy_60@163.com).

Clinical Infectious Diseases 2013;56(5):752

© The Author 2012. Published by Oxford University Press on behalf of the Infectious Diseases Society of America. All rights reserved. For Permissions, please e-mail: permissions@oup.com.

DOI: 10.1093/cid/cis1012

752 • CID 2013;56 (1 March) • CORRESPONDENCE