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<td>Author(s)</td>
<td>Yamamoto, Taro; Shimada, Masaaki; Moji, Kazuhiko; Mizota, Tsutomu</td>
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RESEARCH ACTIVITIES ON EMERGING AND REEMERGING DISEASES

TARO YAMAMOTO¹, MASAHIKO SHIMADA², KAZUHIKO MOJI³ AND TSUTOMU MIZOTA⁴

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Abstract: This paper showed the trend in the number of paper published on emerging and reemerging diseases by using the list of the Medline, which is one of the most valuable databases in the clinical and biological medicine. The number of research papers published on the emerging and reemerging infections in that database decreased in 1997, in comparison with those between 1994 and 1996, in spite of the fact that the total number of the paper published has been increasing year by year. There is also a report showing that the number of the published papers of noticeable infectious diseases such as AIDS, Hepatitis B, Gonorrhea, Pertussis and Tuberculosis declined by 15% or more in the USA from 1993 to 1995. It also became clear that USA is the highest in rank for the number of papers published and it was well ahead of the other countries. However, as for Vibrio cholerae O139, Human T-lymphotropic Virus type 1 and Plague, a lot of papers have been published by responding countries like India, Japan and Russia, respectively. This result might be showing that research activity of each country for each disease relates to the extent of their concern over each disease.

Key words: Emerging disease, Reemerging disease

INTRODUCTION

There was a paper titled “Infectious Diseases-A global health threat” published by US government in 1995, which showed the importance of arising awareness of the infectious disease. According to the WHO and CDC in Atlanta, United States, the term of “emerging and reemerging diseases” refers to diseases of infectious origin whose incidence in human has either increased within the past two decades or threatens to increase in the near future (Institute of Medicine, 1992). And CDC listed at least thirty diseases as representatives of emerging and reemerging diseases.

National opinion leaders generally had considered the threat of infectious diseases to be of only historical interest in 1960s and 1970s (Lederberg et al., 1992; Garrett, 1994; Martine, 1996; Sande, 1996; Schwartz, 1997; Stephens et al., 1998). However, the emergence of HIV or Ebola virus as well as the resurgence of Tuberculosis or Malaria has changed the political circumstances that surround the infectious diseases.

Infectious diseases also remain the leading courses of death not only in the developing countries but also in developed countries like USA (World Bank, 1993; McGinnis et al., 1993). Further, emerging and reemerging infections have been attracting greater attention from not only the public health viewpoint but also national security viewpoint in recent years. Under those circumstances, we had a strong interest in whether research activities on emerging and reemerging infections have changed or not, and how.

We thought that the number of paper published is one of the appropriate indicators to estimate their research activities on those infectious diseases.

METHODS

Medline on Internet was chosen for this survey because it has a broader coverage about biomedical studies. Papers written in English were also selected. There are 105,676 papers in total. The reason why papers written in other languages were excluded is that those might be inferior in quality to the international journals written in English and less reading worldwide. Medline is published by National Library of Medicine (NLM) in the United States and is the main database for secondary reference materials in the field of medicine. Papers were selected by the title including the name of pathogens and were categorized by country, in which corresponding institutions were located, even if studies were conducted through international col-
The total ranking list was made by giving scores to the countries. In terms of the number of papers, the first, second and third ranking countries were given five, three and one, respectively and all the scores for each country were added up at the end.
RESULT AND DISCUSSION

Trend in the number of research papers: In terms of emerging diseases, 58,552 papers had been published in Medline between 1980 and 1997, in total (Table 1). Human immunodeficiency virus (HIV), Hepatitis C virus (HCV) and Helicobacter pylori were the first, second and third in ranking for the number of papers, respectively. However, except for enterohemorrhagic Escherichia coli O157 and Human herpes virus 8 (HHV 8), the number of publication in 1997 for enterohemorrhagic ing for the number of papers, respectively. However, except for enterohemorrhagic Escherichia coli O157 and Human herpes virus 8 (HHV 8), the number of publication in 1997 is much fewer than the average number between 1994 and 1996. In recent year, enterohemorrhagic E. coli O157 endemic occurred in some developed countries and HHV 8 was shown to be associated with Kaposi’s sarcoma.

Regarding the reemerging diseases, 47,124 papers were published in total in Medline between 1980 and 1997 (Table 2). The papers related to Tuberculosis take the first place and papers on Malaria take the second in number. The number of research papers listed as reemerging diseases decreased in 1997, compared with the average number of papers published between 1994 and 1996.

It is unknown whether the decreased number of the papers found may reflect reduced concern over emerging and reemerging diseases. The number of papers published reflects to some extents of concerning over those infectious diseases in the last several years. Thus, this result might be showing the decreasing of the concerning over emerging and reemerging diseases despite the fact that there are a lot of papers which advocate the importance of the research on emerging and reemerging diseases (Anthony, 1998; MMWR, 1998).

High-ranking countries in the number of papers: Regarding to the emerging diseases, USA was the highest in rank for the number of papers published except for HCV, Human T-lymphotropic Virus type 1 (HTLV-1), Ebola and Vibrio cholerae O139. Japan was the highest ranking for HCV and HTLV-1, and Russia was the highest for Ebola, and India was the highest for V. cholerae O139. UK is the second country for seven pathogens in terms of the number of paper published, and France and Japan were the second for five pathogens, and USA was the second for four, and Germany was the second for three. Excluding USA, UK, Japan, France and Germany, only Russia, India, Canada and Italy were seen in top three countries.

In terms of reemerging diseases, USA were also the highest in ranking for those except Leishmaniasis, Toxoplasmosis, Plague and Echinococcus. France was the highest in ranking for Leishmaniasis and Toxoplasmosis, and Russia was the highest for Plague, and New Zealand and Australia was the highest for Echinococcus. USA are also the second country for three pathogens in terms of the number of paper published, and France, UK and Russia were the second for two pathogens. Japan was never seen in top two countries.

As for the V. cholerae O139, HTLV-1 and Plague, a lot of papers have been published by responding countries like India, Japan and Russia, respectively. This result might be showing that research activity of each country for each disease relates to the extent of their concern over each disease.

The total ranking was shown in Table 3. Regarding both emerging and reemerging diseases, USA were highest ranking and it was well ahead of the other countries. France and UK published papers in the field of both emerging and reemerging diseases were ranking within top four countries. On the other hand, Japan and Russia had tended to focus on emerging diseases and reemerging diseases, respectively. Although there is no clear reason why Japan and Russia had those tendencies, the paper on “Cholera” and “Plague” contribute Russia to the high ranking in the field of reemerging diseases.

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