

Fondo Interno Ricerca Scientifica e Tecnologica (FIRST), University of Milan.

Potential conflicts of interest. All authors: no conflicts.

Laurenzia Ferraris,¹ Giusi Maria Bellistri,²
Valentina Pegorer,² Camilla Tincati,²
Luca Meroni,¹ Massimo Galli,¹
Antonella d'Arminio Monforte,² Andrea Gori,³
and Giulia Marchetti²

¹Department of Clinical Sciences, "Luigi Sacco" Hospital, and ²Department of Medicine, Surgery and Dentistry, Clinic of Infectious Diseases, "San Paolo" Hospital, University of Milan, Milan, and ³Division of Infectious Diseases, "San Gerardo" Hospital, Monza, Italy

References

1. Moore RD, Keruly JC. CD4⁺ cell count 6 years after commencement of highly active antiretroviral therapy in persons with sustained virologic suppression. *Clin Infect Dis* **2007**; *44*: 441–6.
2. Grabar S, Le Moing V, Goujard C, et al. Clinical outcome of patients with HIV-1 infection according to immunologic and virologic response after 6 months of highly active antiretroviral therapy. *Ann Intern Med* **2000**; *133*: 401–10.
3. Egger M, May M, Chene G, et al. Prognosis of HIV-1-infected patients starting highly active antiretroviral therapy: a collaborative analysis of prospective studies. *Lancet* **2002**; *360*:119–29.
4. Florence E, Lundgren J, Dreezen C, et al. Factors associated with a reduced CD4 lymphocyte count response to HAART despite full viral suppression in the EuroSIDA study. *HIV Med* **2003**; *4*:255–62.
5. Kaufmann GR, Furrer H, Ledergerber B, et al. Characteristics, determinants, and clinical relevance of CD4 T cell recovery to <500 cells/microL in HIV type 1-infected individuals receiving potent antiretroviral therapy. *Clin Infect Dis* **2005**; *41*:361–72.
6. Anthony KB, Yoder C, Metcalf JA, et al. Incomplete CD4 T cell recovery in HIV-1 infection after 12 months of highly active antiretroviral therapy is associated with ongoing increased CD4 T cell activation and turnover. *J Acquir Immune Defic Syndr* **2003**; *33*: 125–33.
7. Benveniste O, Flahault A, Rollot F, et al. Mechanisms involved in the low-level regeneration of CD4⁺ cells in HIV-1-infected patients receiving highly active antiretroviral therapy who have prolonged undetectable plasma viral loads. *J Infect Dis* **2005**; *191*:1670–9.
8. Marchetti G, Gori A, Casabianca A, et al. Comparative analysis of T-cell turnover and homeostatic parameters in HIV-infected patients with discordant immune-virological responses to HAART. *AIDS* **2006**; *20*:1727–36.
9. Alves NL, Arosa FA, van Lier RA. Common gamma chain cytokines: dissidence in the details. *Immunol Lett* **2007**; *108*:113–20.

10. Fry T, Mackall C. Interleukin-7: from bench to clinic. *Blood* **2002**; *99*:3892–904.

Reprints or correspondence: Dr. Giulia Marchetti, Dept. of Medicine, Surgery and Dentistry, Clinic of Infectious Diseases, "San Paolo" Hospital, University of Milan, via A. di Rudini, 8- 20142 Milan, Italy (giulia.marchetti@unimi.it).

Clinical Infectious Diseases **2008**; *46*:149–50

© 2008 by the Infectious Diseases Society of America. All rights reserved. 1058-4838/2008/4601-0029\$15.00
DOI: 10.1086/524087

Cholera or Choleric?

TO THE EDITOR—The cover of the 1 September 2007 issue of *Clinical Infectious Diseases* shows a 14th-century painting based on an 11th-century Arabic book that was described as an illustration of a treatment of cholera. However, there is no evidence that the disease that we now call cholera, caused by *Vibrio cholerae*, existed in Europe or Arabia at those times. The first evidence of the presence of this disease spreading westward outside the Indian subcontinent arose in the early 19th century [1].

Prior to the emergence of what we now know as cholera, the term "cholera" was sometimes applied to what were then considered to be various disorders traceable to disturbances of bile, including a "choleric" or angry disposition [2]. It appears to be likely that the cover illustration was intended to show treatment of that disorder, because the patient appears to be agitated, with breasts exposed, and seems to be biting a towel. There is no sign of the diarrhea, vomiting, dehydration, or collapse that are associated with what we now know as cholera.

Acknowledgments

Potential conflicts of interest. D.R.N.: no conflicts.

David R. Nalin

References

1. Pollitzer R. Cholera. Geneva: World Health Organization Monograph, **1959**.
2. Barua D, Greenough WB III, eds. Cholera. New York: Plenum, **1992**.

Reprints or correspondence: Dr. David R. Nalin, 100 Lucky Hill Rd., West Chester, PA 19382 (davidnalin@aol.com).

Clinical Infectious Diseases **2008**; *46*:150

© 2008 by the Infectious Diseases Society of America. All rights reserved. 1058-4838/2008/4601-0030\$15.00
DOI: 10.1086/524088

Interstrain Antigenic Variability of Mumps Viruses

TO THE EDITOR—We would like to congratulate Peltola et al. [1] on their excellent review. As the authors emphasize, protection from clinical disease is not perfect, even after 2 doses of mumps component vaccine; both primary and secondary vaccine failure were discussed as potential reasons. Another possibility for lack of protection after mumps vaccination (and wild-type virus infection) is the existence of heterologous mumps viruses that may escape immune protection because of interstrain antigenic variability [2, 3]. Here, we report 3 such laboratory-confirmed cases of symptomatic mumps virus infection in patients with documented pre-existing immunity.

The first case occurred in a 12-year-old girl who had received 2 mumps vaccinations (with Jeryl-Lynn vaccine strain in both July 1990 and April 1997) and presented with a lymphadenitis colli. At that time, antimumps IgG antibodies were determined in a serum specimen (IgG antibody concentration, 1400 IU/mL; IgM antibody negative). Two weeks later, bilateral parotid swelling appeared; a second ELISA performed in the same laboratory revealed a 17-fold increase in antimumps IgG antibody concentration to 24,000 IU/mL (IgM antibody negative).

The second case occurred in a 9-year-old boy who had received 2 documented mumps vaccinations (with Rubini vaccine strain in July 1995 and with Jeryl-Lynn vaccine strain in March 2000) and presented with acute bilateral parotid swelling; his antimumps IgG antibody concentration was 2900 IU/mL (IgM antibody negative). Four weeks later, convalescent-phase serologic examination revealed a

5.5-fold increase in antimumps IgG antibody concentration to 16,000 IU/mL.

The third case occurred in a 30-year-old male pediatric resident with no history of mumps vaccination who had mumps disease during childhood. He had an antimumps IgG antibody concentration of 33 IU/mL in a serum sample obtained for screening for newly employed health care workers at our institution. One year later, the patient developed acute bilateral parotid swelling. Examination of a serum sample obtained at that time revealed an 8.5-fold increase in IgG antibody concentration to 277 IU/mL; this sample was tested together with the previous sample and was antimumps IgM antibody negative. Neutralizing assays confirmed reinfection, despite pre-existing neutralizing antimumps serum antibodies. Ten days later, the patient's 26-year-old female partner (with no history of mumps disease or vaccination) developed a primary mumps infection (IgM antibody positive). These cases illustrate that symptomatic mumps reinfection may occur in the presence of pre-existing specific mumps virus serum antibodies.

Acknowledgments

We thank A. Tischer for providing the neutralizing assays.

Potential conflicts of interest. U.H. and J.B.: no conflicts.

Ulrich Heininger and Jan Bonhoeffer

University Children's Hospital Basel,
Basel, Switzerland

References

1. Peltola H, Kulkarni PS, Kapre SV, Paunio M, Jadhav SS, Dhare RM. Mumps outbreaks in Canada and the United States: time for new thinking on mumps vaccines. *Clin Infect Dis* 2007;45:459–66.
2. Nojd J, Teele T, Samuelsson A, Orvell C. Mumps virus neutralizing antibodies do not protect against reinfection with a heterologous mumps virus genotype. *Vaccine* 2001;19:1727–31.
3. Rubin S, Mauldin J, Chumakov K, Vanderzanden J, Iskow R, Carbone K. Serological and phylogenetic evidence of monotypic immune responses to different mumps virus strains. *Vaccine* 2006;24:2662–8.

Reprints or correspondence: Dr. Ulrich Heininger, Infectious Disease and Vaccines, University Children's Hospital Basel (UKBB), Postbox, 4005 Basel, Switzerland (Ulrich.Heininger@unibas.ch).

Clinical Infectious Diseases 2008;46:150–1

© 2008 by the Infectious Diseases Society of America. All rights reserved. 1058-4838/2008/4601-0031\$15.00
DOI: 10.1086/524089

Prevention of Traveler's Diarrhea: A Call to Reconvene

TO THE EDITOR—More than 40 years have passed since the initial reports of traveler's diarrhea (TD), and much has been learned about the epidemiology of this illness, which is most often attributed to colonization of the intestinal track with pathogenic bacteria of a broad variety [1, 2]. Although our understanding has improved and effective treatment has been made available, individuals are still traveling from developed countries to lesser developed countries, and ~1 of 3 will experience an acute illness; some of these individuals will be incapacitated, but most will improve within a few days [3].

In addition, >50 years ago, the initial descriptions of postinfectious functional bowel disorders were reported [4, 5], and in the past decade, a proliferation of studies summarized in 2 recent systematic reviews have concluded that ~1 of 10 people who develop TD will acquire postinfectious irritable bowel syndrome (PI-IBS), despite normal preexisting bowel habits [6, 7]. Although PI-IBS is perhaps not as debilitating as less frequent sequelae of reactive arthritis [8], Guillain Barré syndrome [9], or inflammatory bowel disease [10], the attributable burden of PI-IBS is measurable. A quick calculation reveals that, among the 100 million travelers each year from industrialized countries who are at intermediate to high risk of diarrhea, ~30 million will develop TD, and 3 million new cases of PI-IBS will arise [11]. PI-IBS has been reported to persist in 57% of patients 6 years after its onset in one study, and postinfectious functional bowel disorders (predominantly PI-IBS) persisted in 76% of patients 5 years after its

onset in another study [12, 13]. These illnesses not only decrease the quality of life of those afflicted, but the economic impact is considerable. In a review of 18 economic studies conducted in the United States and the United Kingdom, the direct cost per patient-year was estimated to be US\$348–\$8750 (in 2002), the annual number of lost days of work was 9–22 days, and the indirect cost per patient-year was estimated to be \$355–\$3344 [14]. Unquestionably, this represents significant social and economic impact.

In addition to travel-related PI-IBS, the fraction of cases of IBS secondary to domestically acquired foodborne illness needs to be considered. IBS is the most common chronic medical illness, seen in up to 15% of the US population and accounting for nearly one-third of all costs in gastroenterology as a result of investigation, management, and work loss among those seeking care [15–17]. Although the attributable fraction of IBS cases caused by domestic foodborne illness is unknown, it is likely to be large, given the frequency of these illnesses [18]. Thus, the traditional thought of foodborne illness as a self-limited condition also needs serious reconsideration and should inform future food security policy decisions.

Finally, shortly after the first reports of TD 40 years ago, reports of studies evaluating agents for use in prophylaxis followed. A number of effective regimens have been described; however, widespread use of prophylaxis, particularly antimicrobial agents, has been discouraged—a position formalized in a 1985 National Institutes of Health consensus meeting that has been unchallenged [19]. We feel that PI-IBS is a development that challenges this consensus.

The balance of chemoprophylaxis risk, compared with the consequences of TD and sequelae, needs reassessment. Although certain questions remain regarding the natural history of PI-IBS, effective treatment, and consequences of chemoprophylaxis, it is time that the questions regarding what can be done to prevent TD