Supplementary data

Figure S1 is available as Supplementary data at JAC Online (http://jac.oxfordjournals.org/).

References

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Resurgence of penicillin-susceptible Staphylococcus aureus at a hospital in New York State, USA

John K. Crane1,2*

1Division of Infectious Diseases, Room 317 Biomedical Research Bldg, 3435 Main St., University at Buffalo, Buffalo, NY 14214, USA;
2Erie County Medical Center, Buffalo, NY, USA

*Corresponding author. Tel: +1-716-829-2676; Fax: +1-716-829-3889; E-mail: jcrane@buffalo.edu

Keywords: hospital epidemiology, methicillin, antibiotic resistance

Sir,

I read with interest the article by Nissen et al.1 on the treatment of penicillin-susceptible Staphylococcus aureus (PSSA). Recent articles on S. aureus have tended to focus on the rising resistance to antibiotics, including methicillin.2,3 Indeed, methicillin-resistant S. aureus (MRSA) is now the predominant S. aureus type in most hospitals in North America, and the rise of community-acquired MRSA strains means that patients no longer have to be exposed to the hospital environment to acquire a resistant Staphylococcus.

Coincident with the rise of MRSA, however, our hospital has also experienced a resurgence of PSSA (Figure 1). In our 417 bed acute care hospital in upstate New York, PSSA strains have increased to 13% of all S. aureus among patients in ward beds and to 15% among patients in intensive care units (ICUs). Many of the other hospitals in our region have stopped testing S. aureus for susceptibility to penicillin because of the assumption that PSSA has become extinct. The reason for the increase in PSSA strains is unknown, but I suspect that heavy reliance on vancomycin has created a niche for these strains. PSSA appears to have crept back in ‘under the radar’ while our attention has been focused on the more resistant strains.

Our clinical experience is that PSSA strains remain quite virulent; therefore, antibiotic susceptibility should not be mistaken for a lack of aggressiveness in vivo. We agree with Nissen et al.1 that penicillin should be considered the drug of choice for PSSA. Clinical microbiology laboratories should be encouraged to test S. aureus strains for susceptibility to penicillin.

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Transparency declarations

None to declare.

References

1 Nissen JL, Skov R, Knudsen JD et al. Effectiveness of penicillin, dicloxacillin and cefuroxime for penicillin-susceptible Staphylococcus aureus...
Vegetarians are not less colonized with extended-spectrum-β-lactamase-producing bacteria than meat eaters

Dagmar König1,2, Petra Gastmeier1,2, Axel Kola1,2, Frank Schwab1,2 and Elisabeth Meyer1,2*

1Institute of Hygiene and Environmental Medicine, Charité University Medicine, Berlin, Germany; 2National Reference Centre for Surveillance of Nosocomial Infections, Berlin, Germany

*Corresponding author. Institute of Hygiene and Environmental Medicine, Charité University Medicine, Berlin, Germany; Tel: +49-30-8445-4883; Fax: +49-30-8445-3682; E-mail: elisabeth.meyer@charite.de

Keywords: gastrointestinal colonization, dietary habits, ESBL carriage

Sir,

Antibiotics affect the composition of the gastrointestinal flora in humans and food animals, and may select for resistant bacteria. Recent studies showed that meat products were colonized with resistant bacteria, especially with extended-spectrum-β-lactamase (ESBL) producing Enterobacteriaceae.1,2 The mobile genetic elements in meat and intestinal carriage were highly similar; a prediction model classified 40% of the human isolates as chicken meat isolates in a Dutch study.3 These findings suggest that resistant bacteria are acquired by humans via the food chain, predominantly by meat consumption. The purpose of this study was therefore to determine the prevalence of colonization with ESBL-producing bacteria in vegetarians and to compare the prevalence with that of meat eaters in Germany.

Prior to the start, the study was approved by a positive statement from the local data protection commissioner (12 April 2013) and the ethics commission of the Charité University Medicine (06 August 2012).

Vegetarians were defined as persons on a vegetarian diet for ≥ 1 year before testing.

Participants were recruited by postings on vegetarian web sites and on the web site of Charité University Medicine. Participation was voluntary and pseudonymous.

The voluntary participants received all the necessary documents by mail. They were asked to perform a rectal swab and to fill in a questionnaire on risk factors of ESBL carriage (report on diet, first language, recent travel, animal contact, antibiotic use and previous stays in hospital). The rectal swab and the completed questionnaire were sent back to us via mail by the volunteers. A total of 118 individuals contacted our institute and 94 of them sent back the envelope containing the questionnaire and rectal swab. Rectal swabs were inoculated onto ESBL chromogenic agar; species identification and susceptibility testing were done using a Vitek 2 system. The data were evaluated by descriptive data analysis.

To compare the ESBL prevalence rate of vegetarians in this study with the prevalence rate found in a study conducted previously with omnivorous participants, a Fisher’s exact test was used.

Ninety-four vegetarians participated, and German was the first language for 97.9% of the participants. ESBL-producing Escherichia coli were isolated from 2.1% of them (95% CI 0.37–8.21). Both of the ESBL-colonized individuals had lived for > 6 months on a vegan diet, i.e. they did not consume any products from animals (e.g. no dairy products or eggs). One of the two colonized individuals had a history of travel to England and one to Italy and Portugal. Neither of the two individuals had recently used antibiotics and neither of them had recently stayed in a hospital. Both of them had contact with pets (cat/cat and dog).

Of the volunteers (n = 94), 72.3% were on a vegan diet. Of the participating persons, 61.7% had contact with animals (mainly cats and dogs) and 58.5% reported a history of travel during the last 12 months; the two main destinations were Europe (51.1%) and Asia (10.6%). Of the volunteers, 28.7% had used antibiotics in the 12 months prior to the rectal swab and 11.7% had recently stayed in a hospital.

In a previous study from our institution, data from voluntary participants who lived in Germany on an omnivorous diet showed an ESBL prevalence rate of 3.6% (8 out of 223 meat eaters). The ESBL prevalence in vegetarians does not differ significantly from the prevalence in meat eaters (P = 0.521, Fisher’s exact test).

There are some limitations of the study. First, participation was voluntary and pseudonymous; therefore, this was not a representative sample. Second, we compared with a historical group, though that study was also conducted in our institute 2 years ago (2011).

In countries with a low consumption of meat, such as India, or in African camps for malnourished children, the rate of colonization with ESBL-producing Enterobacteriaceae is high (>30%), which makes transmission of bacteria likely from environmental sources, such as water used for drinking and food preparation.4,5 However, even in western European countries with a relatively high consumption of meat and a well-known connection between the isolation of resistant strains from chicken meat and human carriers, a vegetarian or even a vegan diet does not seem to be protective with respect to colonization with ESBL-producing Enterobacteriaceae and suggests ways of transmission other than meat consumption.

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