Figure. Testing for xenotropic murine leukemia–related virus (XMRV) in patients with fibromyalgia. Lanes 1 and 13, molecular weight marker ΦX174RF Haelll; lanes 2–5, hBG for patients 1–4 (primers: hBG-FI-170/hBG-RI-273 (103 bp); lanes 6–12, positive control (pcDNA3.1-XMRV-Vp62) 1,000 copies (lanes 6 and 10) and 100 copies (lanes 7–9 and 11, primers gag 419F/1154R (735 bp); lane 7, primers gag MLV-GAG-I-F/MLV-GAG-I-R (413 bp); lane 8, primers gag MLV-NP116/MLV-NP117 (380 bp); lane 9, primers gag XMRV-FI-441/XMRV-RI-566 (125 bp); lane 10, primers env 5922F/6273R (351 bp); lane 11, primers env 5922F/6173R (252 bp); lane 12, primers env 5942F/6159R (218 bp).

References

1. Urisman A, Molinaro RJ, Fischer N, Plummer SJ, Casey G, Klein EA, et al. Identification of a novel gammaretrovirus in prostate tumors of patients homozygous for R462Q RNASEL variant. PLoS Pathog. 2006;2:e25. DOI: 10.1371/journal.ppat.0020025

2. Lombardi VC, Ruscetti FW, Das GJ, Pfost MA, Hagen KS, Peterson DL, et al. Detection of an infectious retrovirus, XMRV, in blood cells of patients with chronic fatigue syndrome. Science. 2009;326:585–9. Epub 2009 Oct 8. DOI: 10.1126/science.1179052

3. Erlwine O, Kaye S, McClure MO, Weber J, Wills G, Collier D, et al. Failure to detect the novel retrovirus XMRV in chronic fatigue syndrome. PLoS ONE. 2010;5:e8519. DOI: 10.1371/journal.pone.0008519

4. Groom HC, Boucherit VC, Makinson K, Randal E, Baptista S, Hagan S, et al. Absence of xenotropic murine leukaemia virus–related virus in UK patients with chronic fatigue syndrome. Retrovirology. 2010;7:10. DOI: 10.1186/1742-4690-7-10

5. van Kuppeveld FJ, de Jong AS, Lanke KH, Verhaegh GW, Melchers WJ, Swanink CM, et al. Prevalence of xenotropic murine leukaemia virus–related virus in patients with chronic fatigue syndrome in the Netherlands: retrospective analysis of samples from an established cohort. BMJ. 2010;340:c1018. DOI: 10.1136/bmj.c1018

6. Switzer WM, Jia H, Hohn O, Zheng H, Tang S, Shankar A, et al. Absence of evidence of xenotropic murine leukemia virus–related virus infection in persons with chronic fatigue syndrome and healthy controls in the United States. Retrovirology. 2010;7:57. DOI: 10.1186/1742-4690-7-57

7. Lo SC, Pripuzova N, Li B, Komaroff AL, Hung GC, Wang R, et al. Detection of MLV-related virus gene sequences in blood of patients with chronic fatigue syndrome and healthy blood donors. Proc Natl Acad Sci U S A. 2010;107:15874–9. DOI: 10.1073/pnas.1006901107

8. Buskila D, Atzeni F, Sarzi-Puttini P. Etiology of fibromyalgia: the possible role of infection and vaccination. Autoimmun Rev. 2008;8:41–3. DOI: 10.1016/j.autrev.2008.07.023

9. McKay PG, Duffy T, Martin CR. Are chronic fatigue syndrome and fibromyalgia the same? Implications for the provision of appropriate mental health intervention. J Psychiatr Ment Health Nurs. 2009;16:884–94. DOI: 10.1111/j.1365-2850.2009.01464.x

10. Dong B, Kim S, Hong S, Das GJ, Malathi K, Klein EA, et al. An infectious retrovirus susceptible to an IFN antiviral pathway from human prostate tumors. Proc Natl Acad Sci U S A. 2007;104:1655–60. DOI: 10.1073/pnas.0610291104

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Clonal Spread of Streptococcus pyogenes emm44 among Homeless Persons, Rennes, France

To the Editor: Streptococcus pyogenes, or group A streptococci (GAS), are human pathogens responsible for pharyngitis as well as skin and soft tissue infections. Invasive GAS diseases, including bacteremia, cellulitis, and necrotizing fasciitis, are life-threatening, especially when associated with toxic shock syndrome. Several risk factors for GAS infections are known, such as diabetes, immunosuppression, drug use, and skin lesions (1,2).

In France in 2008, 12% of GAS strains were reported resistant to tetracycline by the national reference center. Unexpected recognition of 8 tetracycline-resistant GAS isolates in January and February 2009 at the 1,950-bed
University Hospital of Rennes in western France led to further investigation. We report results of characterization of tetracycline-resistant GAS isolates collected during 2009 from hospitalized and outclinic patients.

Isolates were identified as GAS on the basis of β-hemolysis, Gram staining, negative catalase test result, positive pyrrolidonyl arylamidase test result, and agglutination with Lancefield group A antiserum. Antimicrobial drug susceptibility to penicillin G, amoxicillin, erythromycin, lincomycin, tetracycline, rifampin, streptomycin, kanamycin, gentamicin, and vancomycin was tested by using the disk diffusion method according to the criteria of the French Society for Microbiology (www.sfm.asso.fr). Of 72 nonduplicate GAS isolates collected, 25 (17 from inpatients, 8 from outpatients) were identified as tetracycline resistant; they were further characterized as described (3).

The emm types of these 25 tetracycline-resistant strains were determined by sequencing the variable 5′ end of the emm gene and comparing sequences with the Centers for Disease Control and Prevention database (www.cdc.gov/ncidod/biotech/strep/doc.htm). Twenty-three strains were emm44 type, 1 was emm105, and 1 emm83.

Pulsed-field gel electrophoresis (PFGE) patterns obtained after DNA digestion by Smal restriction enzyme were compared according to Tenover criteria (4). The epidemic clone including 22 strains was characterized by an identical PFGE pattern 44-A1, whereas PFGE patterns 44-A5 of the remaining emm44 strain differed by 4 DNA bands (Figure). Epidemic strains also shared the same biotype 3 obtained on rapid ID 32 Strep strips (bioMérieux, Marcy l’Etoile, France). T types were determined on trypsinized bacteria by slide agglutination with type-specific antisera. Eleven strains were type T11, 4 type T11/12, 1 type T11/3/13/B3264, and 6 non-T-typeable.

All epidemic emm44 strains were susceptible to all antibacterial agents tested except tetracycline. MICs of tetracycline, determined with Etest method (AB Biodisk, Solna, Sweden), were 24–48 mg/L. Screening of strains by PCR for tet(M), tet(O), tet(K), and tet(L) genes showed tetracycline resistance was related to tet(M) gene. A multiplex PCR for detection of speA, speB, speC, smeZ, and ssa toxin genes showed that epidemic strain possessed only speB gene.

Investigation conducted by local health authorities showed that the first 5 patients with emm44 strain were drug users sharing a squat (illegally occupied housing). Although this place was shut down at the end of February after an outbreak of scabies, additional cases of infections caused by emm44 strain occurred. Medical care is difficult to implement for homeless persons, thus, we limited our action to swabbing symptomatic persons to treat them and to limit spread of the epidemic strain. Following recommendations from the Institute for Public Health Surveillance, in mid-April nurses at the 2 main social centers for homeless persons obtained samples from 17 persons. Eleven persons were infected with GAS, of whom 8 had not been swabbed before. All but 1 isolate was emm44.

Among the 22 patients infected with epidemic 44-A1 clone, 4 had several successive isolations of this strain. Most (19) infections were secondary infections of skin injuries; others were abscesses (4), septic arthritis (2), necrotizing fasciitis (1), erysipelas (1), and hygroma (1). Five isolates were from sterile sites (1 surgical sample of necrotizing fasciitis, 1 blood culture, and 3 joint fluids). Most infections had favorable outcomes, with the exception of a 79-year old man who died of erysipelas. Patient median age was 37 years (range 20–79 years); all but 1 were men. Eighty-six percent had risk factors such as alcohol abuse (17, 77%), homelessness (16, 73%), drug use (11, 50%), hepatitis C infection (4, 8%), and HIV infection (1, 4.5%). Two patients had no identified risk factors. Complete characteristics of 50 patients infected with a strain of GAS different from 44-A1 clone were not available. However, this population did differ by its sex ratio (28 men:22 women) and by older median age (47.3 years).

We report clonal spread of an emm44 tetracycline-resistant GAS strain in marginal populations (drug users and homeless persons) in 316 Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 17, No. 2, February 2011
Rennes. This strain, characterized by PFGE pattern 44-A1, represented 22/25 tetracycline resistant GAS isolates and 30% of the 72 GAS isolates identified at the hospital in Pontchaillou in 2009. Locally, emergence of the 44-A1 clone led to the dramatic increase of GAS tetracycline resistance, from 17% in 2008 to 35% in 2009. *emm*44 GAS strains, which share identical 5′*emm* sequences with previously designated M/*emm*61 strains (5), have mainly been isolated in Asia from throat and skin specimens (6,7). They were rarely reported as responsible for invasive infections in France or other parts of the world (5,8). Polyclonal and *emm*25 and *emm*83 monoclonal GAS outbreaks have been recently described among drug users in Switzerland, the United Kingdom, and Spain (9,10) without robust evidence of enhanced virulence of the causative GAS strains. In the outbreak we report, skin infections might be a leading cause of bacterial transmission between people living in poor hygienic conditions and overcrowded spaces.

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References

1. Factor SH, Levine OS, Schwartz B, Harrison LH, Farley MM, McGee A, et al. Invasive group A streptococcal disease: risk factors for adults. Emerg Infect Dis. 2003;9:970–77.
2. Lamagni TL, Darenberg J, Luca-Harari B, Siljander T, Efstratiou A, Henriques-Normark B, et al. Epidemiology of severe *Streptococcus pyogenes* disease in Europe. J Clin Microbiol. 2008;46:2359–67. DOI: 10.1128/JCM.00422-08.
3. Mihaila-Amrouche L, Bouvet A, Loubinoux I. Clonal spread of *emm* type 28 isolates of *Streptococcus pyogenes* that are multiresistant to antibiotics. J Clin Microbiol. 2004;42:3844–6. DOI: 10.1128/JCM.42.8.3844-3846.2004
4. Tenover FC, Arbeit RD, Goering RV, Mickelsen PA, Murray BE, Persing DH, et al. Interpreting chromosomal DNA restriction patterns produced by pulsed-field gel electrophoresis: criteria for bacterial strain typing. J Clin Microbiol. 1995;33:2233–9.
5. Johnson DR, Kaplan EL, VanGheem A, Facklam RR, Beall B. Characterization of group A streptococci (*Streptococcus pyogenes*): correlation of M-protein and *emm*-gene type with T-protein agglutination pattern and serum opacity factor. J Med Microbiol. 2009;58:157–64. DOI: 10.1099/jmm.0.46224-0.
6. Koh EH, Kim S, Lee NY. Decrease of erythromycin resistance in group A streptococci by change of *emm* distribution. Jpn J Infect Dis. 2008;61:261–3.
7. Sagar V, Kumar R, Ganguly NK, Chakraborti A. Comparative analysis of *emm* type pattern of group A streptococcus throat and skin isolates from India and their association with closely related SIC, a streptococcal virulence factor. BMC Microbiol. 2008;8:150. DOI: 10.1186/1471-2180-8-150
8. Luca-Harari B, Darenberg J, Neal S, Siljander T, Strakova L, Tanna A, et al. Clonal and microbiological characteristics of severe *Streptococcus pyogenes* disease in Europe. J Clin Microbiol. 2009;47:1155–65. DOI: 10.1128/JCM.02155-08.
9. Lamagni TL, Neal S, Keshishian C, Hope V, George R, Duckworth G, et al. Epidemic of severe *Streptococcus pyogenes* infections in injecting drug users in the UK, 2003–2004. Clin Microbiol Infect. 2008;14:1002–9. DOI: 10.1111/j.1469-0691.2008.02076.x.
10. Sierra JM, Sanchez F, Castro P, Salvado M, de la Red G, Libois A, et al. Group A streptococcal infections in injection drug users in Barcelona, Spain: epidemiologic, clinical, and microbiologic analysis of 3 clusters of cases from 2000 to 2003. Medicine (Baltimore). 2006;85:139–46. DOI: 10.1097/01.md.0000224707.24392.52