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References

1. Stevenson GW, Hoang H, Schwartz KJ, Burrough ER, Sun D, Madson D, et al. Emergence of porcine epidemic diarrhea virus in the United States: clinical signs, lesions, and viral genomic sequences. J Vet Diagn Invest. 2013;25:649–54d http://dx.doi.org/10.1177/1040638713501675
2. Vlasova AN, Marthaler D, Wang Q, Culhane MR, Rossow KD, Rovira A, et al. Distinct characteristics and complex evolution of PEDV, North America, May 2013–February 2014. Emerg Infect Dis. 2014;20:1620–8.
3. Pensaert MB, de Bouck P. A new coronavirus-like particle associated with diarrhea in swine. Arch Virol. 1978;58:243–7d http://dx.doi.org/10.1007/BF01317606
4. Song D, Park B. Porcine epidemic diarrhoea virus: a comprehensive review of molecular epidemiology, diagnosis, and vaccines. Virus Genes. 2012;44:167–75d http://dx.doi.org/10.1007/s11262-012-0713-1
5. Luo Y, Zhang J, Deng X, Ye Y, Liao M, Fan H. Complete genome sequence of a highly prevalent isolate of porcine epidemic diarrhea virus in South China. J Virol. 2012;86:9551d http://dx.doi.org/10.1128/JVI.01455-12
6. Fan H, Zhang J, Ye Y, Tong T, Xie K, Liao M. Complete genome sequence of a novel porcine epidemic diarrhea virus in south China. J Virol. 2012;86:10248–9d http://dx.doi.org/10.1128/JVI.01589-12
7. Marthaler D, Jiang Y, Otterson T, Goyal S, Rossow K, Collins J. Complete genome sequence of porcine epidemic diarrhea virus strain USA/Colorado/2013 from the United States. Genome Announc. 2013;1: http://dx.doi.org/10.1128/genomeA.00555-13
8. Jung K, Wang Q, Scheuer KA, Lu Z, Zhang Y, Saif LJ. Pathology of US porcine epidemic diarrhea virus strain PC21A in gnotobiotic pigs. Emerg Infect Dis. 2014;20:662–5d http://dx.doi.org/10.3201/eid2004.131685
9. Wang L, Byrum B, Zhang Y. New variant of porcine epidemic diarrhea virus, united states, 2014. Emerg Infect Dis. 2014;20:917–9d http://dx.doi.org/10.3201/eid2005.140195

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Schistosomiasis in Cattle in Corsica, France

To the Editor: The origin of the human cases of urinary schistosomiasis observed in France was recently identified (*1*,*2*). None of these patients had traveled to a disease-endemic area, but all had vacationed in Corsica and had swum in the Cavu River, near Porto-Vecchio in southern Corsica. The letter by Berry et al. to Emerging Infectious Diseases (*2*) reminded us that bovine schistosomiasis had been reported in Corsica in the past, up through the 1960s, in the same area.

In cattle, *Schistosoma bovis* has been found in Africa and the Middle East (Iraq, Israel), as well as in the Mediterranean Basin, especially in Sicily and Sardinia in Italy, and Corsica, France, where cases were reported as early as 1929 by Emile Brumpt (*3*,*4*). In addition, certain *Schistosoma* blood fluke species, especially *S. haematobium* and *S. bovis*, can share the same definitive hosts (humans or animals) and the same intermediate hosts, i.e., *Bulinus contortus* snails. Cattle, sheep and goats, horses, wild ruminants and rodents can all be definitive hosts of *S. bovis*.

In cattle, the clinical manifestations of infestation are poorly documented. In experimental animals, intermittent diarrhea has been observed, sometimes containing blood or mucus, in addition to a loss of appetite, progressive anemia, and, especially, blood eosinophilia, a sign which, as in humans, indicates that the infestation is recent. Under natural conditions, the disease is believed to be mainly subclinical and chronic. It should be noted that the acute form of the disease is more common in sheep (*5*). With regard to lesions, the disease is closer to intestinal schistosomiasis (caused by *S. mansoni*) than to urinary schistosomiasis. The lesions are characterized by the formation of gray-white granulomas ³5 mmin diameter, or by polyps, and intestinal hemorrhaging due to bleeding of the granulomas formed during migration of the parasite's eggs to the intestinal lumen. In the liver, granulomas may also be observed, as well as fibrosis of the portal vein. Hepatomegaly and cirrhosis may also be present. These lesions are caused by adult parasites in the mesenteric vessels and the portal vein.

The presence of *Bulinus truncatus contortus* (Michaud) (*Mollusca, Gastropoda, Hygrophila*) snails was mentioned as early as 1832, and the species was formally identified in 1922 in Corsica. Since that time it has been assumed that this mollusc could be a potential intermediate host for human (*6*) or bovine (*3*,*7*) schistosomiasis.

In 1963, Gretillat studied bovine schistosomiasis in Corsica (*8*). Investigations of *Bulinus* snails were conducted solely in the southern part of the island, in the area where Brumpt had described their presence 30 years earlier. *Bulinus* snails were identified in 4 rivers, the Rizzanese, Baraci, Ortolo and Spartano, especially in residual ponds of waterways sometimes quite close to the sea. At 2 sites, unidentifiable cercaria larvae were revealed through dissection (5 of 70 *Bulinus* snails in the Rizzanese, 26 of 50 in the Baraci). As part of the same study, slaughterhouse examination of 15 cattle from regions where *Bulinus* snails had been discovered revealed adult *Schistosoma* in the mesenteric

and vesical veins, as well as in the liver and the portal system.

In a more comprehensive study (*9*), *Bulinus* snails were found in all of Corsica's coastal rivers, except for those in the northwestern-most part of the island. However, of the 55 bodies of water where *Bulinus* snails were found, only 1 contained gastropods with *Schistosoma* cercariae, and results of a search for blood flukes in 220 small rodents (known for being susceptible to *S. bovis* and captured near bodies of water where *Bulinus* snails had been observed) were negative.

We have found no other documentation on bovine schistosomiasis in Corsica between 1966 and the present time. Has this disease disappeared since the 1960s? Is it still present as an enzootic disease with silent transmission? It should be noted that the disease produces few or no clinical signs and that slaughterhouse detection requires dissection of the circulatory system of the abdominal cavity. In any case, the discovery of human cases of schistosomiasis proves that a human–*Bulinus* parasitic cycle exists in Corsica, and therefore an animal–*Bulinus* cycle may exist as well. For the sake of scientific interest, an investigation into the presence of *S. bovis* in ruminants in Corsica would be worthwhile. Moreover, the fact that both *Schistosoma* species use the same intermediate host, *Bulinus contortus* snails, could cause problems with differential diagnosis.

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References

1. Holtfreter MC, Moné H, Müller-Stöver I, Mouahid G, Richter J. *Schistosoma haematobium* infections acquired in Corsica, France, August 2013. Euro Surveill. 2014;19:20821 http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20821.
2. Berry A, Moné H, Iriart X, Mouahid G, Abbo O, Boissier J, et al. Schistosomiasis haematobium, Corsica, France [letter]. Emerg Infect Dis. 2014;20:1595–7. http://dx.doi.org/10.3201/eid2009.140928.
3. Brumpt E. Cycle évolutif du *Schistosoma bovis* (*Bilharzia crassa*); infection spontanée de *Bulinus contortus* en Corse C.-R. Acad. Sci. 1929;CLXXXXI:879.
4. Brumpt E. Cycle évolutif complet de *Schistosoma bovis*. Infection naturelle en Corse et infection expérimentale de *Bulinus contortus*. Ann Parasitol Hum Comp. 1930;VIII:17–50.
5. Pandey VS, Ziam H. Helminthoses circulatoires. In: Lefèvre P-C, Blancou J, Charmette R, editors. Principales maladies infectieuses et parasitaires du bétail, Europe et régions chaudes. Paris: Tec & Doc Editions Lavoisier; 2003. p. 1485–99.
6. Dollfus PH. Sur la présence en France et en Corse du *Bullinus contortus* (Michaud), hôte intermédiaire de *Schistosoma hæmatobium* (Bilharz): note préliminaire. Bull Soc Pathol Exot. 1922;15:208–12.
7. Arfaa F, Massoud J, Chu KY. Susceptibility of Portuguese *Bulinus contortus* to Iranian strains of *Schistosoma haematobium* and *S. bovis*. Bull World Health Organ. 1967;37:165–6.
8. Gretillat S. Epidémiologie de certaines affections à trématodes des animaux domestiques en Corse (bilharziose bovine et distomatose bovine et ovine). Ann Parasitol Hum Comp. 1963;38:471–81.
9. Doby J-M, Rault S, Deblock S, Chabaud A. Bulins et bilharzioses en Corse. Répartition, fréquence et biologie de "*Bulinus truncates*" [in French]. Annal. Parasitol. 1966;4:337–49.

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HIV-Associated Disseminated Emmonsiosis, Johannesburg, South Africa

To the Editor: *Emmonsia* spp., dimorphic fungi found worldwide, cause disease mainly among lower-order mammals (*1*). Although emmonsia rarely infect humans, the fungi can cause localized granulomatous pulmonary disease (adiaspiromycosis) in immunocompetent persons (*1–4*). Before 2013, no association was known between emmonsia and HIV, and there was no indication that emmonsia were endemic to sub-Saharan Africa.

In 2013 a novel *Emmonsia* sp. that is closely related to *E. pasteuriana* was described. The fungus caused disseminated disease in 13 HIV-infected persons in South Africa (12 in Cape Town, 1 in Bloemfontein) (*5*). Two additional cases of disseminated emmonsiosis caused by this novel species were identified in HIV-uninfected persons (1 immunocompetent, the other immunosuppressed for renal transplantation) in Cape Town (*6*). Because these cases clustered geographically, it was suggested that this novel *Emmonsia* sp. occupies a microenvironment around Cape Town (*7*). We report 3 additional cases of disseminated emmonsiosis from Johannesburg, South Africa, 403 km from Bloemfontein and 1,400 km from Cape Town. All patients were HIV-infected and reported no travel to Bloemfontein or Cape Town.

The 3 patients were admitted to Helen Joseph Hospital between August 2012 and August 2014; all patients were male and had CD4 counts of ≤5 cells/μL at admission. Patient 1 had never received antiretroviral therapy; patients 2 and 3 had defaulted antiretroviral treatment for several months before admission. All patients had disseminated skin rash, pneumonia, anemia, and substantial weight loss; chest radiographs suggested pulmonary tuberculosis. The rash appeared as disseminated hyperpigmented scaly papules and plaques (online Technical Appendix Figure 1, http://wwwnc.cdc.gov/EID/article/20/12/14-0902-Techapp1.pdf). Patients 1 and 2 also had diarrhea and exhibited delirium.

Laboratory investigations for patient 1 showed normocytic anemia,