of transmission across the countries is thought to be ASF virus–contaminated pork products (*2*). The outbreak in Vietnam was confirmed in the northern part of the country, near China, where many instances of illegal movement of animals and meat products across the China–Vietnam border have been reported (http://www.fao.org/3/i8805en/I8805EN.pdf). Therefore, it is likely that the virus originated in China.

Although the p30, p54, and p72 sequences were 100% identical to those from China and Georgia, whole genomes must be monitored for possible changes and further spread of the ASF virus. Since the 2018 outbreak in China, the subsequent ASF outbreak in Vietnam (February 1, 2019) increases the possibility of virus spread to nearby swine-raising Southeast Asia countries, including Laos, Thailand, Cambodia, and Myanmar. Although ASF has occurred in many countries, including Russia and Europe, its outbreak in Asia is far more critical because 60% of the world's pig population is concentrated in that area and the socioeconomic effects of swine disease would be greater than that in other regions. Therefore, to avoid great economic losses worldwide, we highly recommend that preventive and control measures be developed and implemented through international collaboration.

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# Low-Grade Endemicity of Opisthorchiasis, Yangon, Myanmar

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We performed an epidemiologic survey of opisthorchiasis in Yangon, Myanmar. The fecal egg-positive rate of residents was 0.7%, and we recovered an adult fluke after chemotherapy and purging of an egg-positive resident. We detected *Opisthorchis viverrini* metacercariae in freshwater fish. We found the Yangon area to have low-grade endemicity of opisthorchiasis.

The liver fluke *Opisthorchis viverrini*, a well-known cause of cholangiocarcinoma, is distributed predominantly in Southeast Asia countries (*1,2*). In Myanmar, health officials thought that opisthorchiasis might not occur because the population traditionally does not consume raw or undercooked fish. However, 2 recent reports have documented the presence of *O. viverrini* eggs or flukes in Myanmar (*3,4*). In 2017, a molecular study detected a mitochondrial cytochrome *c* oxidase subunit I (*cox1*) gene of *O. viverrini* from the fecal samples of persons in a rural area near Yangon (*3*); however, adult flukes were not recovered from the egg-positive persons. Another study in 2018 detected *O. viverrini* metacercariae from freshwater fish (*Puntius brevis*) caught in central

**Table.** Rates of helminth egg infection, by species, among 2,057 persons in 3 districts of Yangon, Myanmar

| District | No. persons examined | No. (%) positive | | | | | |
|---|---|---|---|---|---|---|---|
| | | *Ascaris lumbricoides* | *Trichuris trichiura* | *Enterobius vermicularis* | *Opisthorchis viverrini* | Other* | Total |
| Hlaing-Thayar | 682 | 17 (2.5) | 90 (13.2) | 2 (0.3) | 2 (0.3) | 2 (0.3) | 113 (16.6) |
| South Dagon | 672 | 83 (13.2) | 90 (14.4) | 11 (1.8) | 8 (1.3) | 4 (0.6) | 196 (31.3) |
| North Dagon | 748 | 66 (8.8) | 94 (12.6) | 6 (0.8) | 4 (0.5) | 5 (0.7) | 175 (23.4) |
| Total | 2,057 | 166 (8.1) | 274 (13.3) | 19 (0.9) | 14 (0.7) | 11 (0.5) | 484 (23.5) |

*Includes 2 cases of hookworm infection and 1 case each of *Taenia* sp. and *Trichostrongylus* sp. infection.

Myanmar and obtained adult flukes from experimentally infected hamsters (*4*).

We recently observed a low-grade endemicity of *O. viverrini* infection among residents in the Yangon area. We also recovered an adult fluke (Appendix Figure, panel A, https://wwwnc.cdc.gov/EID/article/25/7/19-0495-App1.pdf) from an egg-positive resident and detected metacercariae in freshwater fish caught in Yangon.

In December 2015, we performed fecal examinations on 2,057 residents in 3 districts of Yangon (North Dagon, South Dagon, and Hlaing-Thayar) by using the Kato–Katz technique. The total number of helminth egg–positive cases was 484 (23.5%); we recovered eggs of *Trichuris trichiura* whipworms (13.3%), *Ascaris lumbricoides* roundworms (8.1%), *Enterobius vermicularis* pinworms (0.9%), *O. viverrini* flukes (0.7%), and other helminth species (0.5%) (Table).

Among the 14 residents positive for *O. viverrini* eggs (some possibly having mixed infections with minute intestinal fluke species such as *Haplorchis* spp.) (Table; Appendix Figure, panel B), 2 agreed to undergo worm recovery after treatment with praziquantel (40 mg/kg in a single dose) and purging with 25–30 g of $MgSO_4$. Fecal examination and anthelmintic treatment of the residents were officially approved by Myanmar's Ministry of Health and Sport, under the agreement of the South Korea–Myanmar International Collaboration on Intestinal Parasite Control for Schoolchildren in Myanmar (Ethics Review Committee approval no. 005117). Informed consent was received from each person.

The procedure of the worm recovery was as described previously (*5*). One adult fluke that looked like a liver fluke was recovered from 1 of these 2 residents. Minute intestinal fluke species, including *Haplorchis* spp., were not recovered. The adult fluke (Appendix Figure, panel A) was slender (11.1 × 1.5 mm) and had a small oral sucker (0.20 × 0.29 mm), large ventral sucker (0.51 × 0.59 mm), lobed ovary, 2 lobed testes, and a well-developed uterus with numerous eggs (25 × 14 μm). We confirmed the fluke to be an adult specimen of *O. viverrini*.

We also examined 10 species of freshwater fish (n = 160) purchased in a local market of North Dagon to detect *O. viverrini* metacercariae. The fish were transported on ice to Gyeongsang National University College of Medicine (Jinju, South Korea), and examined by using the artificial digestion method (*6*). We detected *O. viverrini* metacercariae in 4 species of fish (forest snakehead [*Channa lucius*], 5/5, 100%; striped snakehead [*C. striata*] 1/29, 3.5%; climbing perch [*Anabas testudineus*] 1/14, 7.1%; and unspecified *Puntioplites* sp., 1/15, 6.7%) (Appendix Figure, panels C, D). In forest snakehead fish, the average metacercarial density per fish was 24.4 (range 1–52). The metacercariae were round to elliptical and were 150–188 μm (average 165 μm) × 98–140 μm (average 122 μm) in size.

The metacercariae were fed orally to 2 golden hamsters (*Mesocricetus auratus*) to recover adult flukes. At day 50 postinfection, 20 adult flukes were recovered from the biliary tracts of the hamsters. The animal experiment was performed in accordance with the guidelines of Gyeongsang National University College of Medicine. The adult flukes were slender (average size 5.1 × 1.2 mm) and had the characteristic features of *O. viverrini* (Appendix Figure, panel F).

Opisthorchiasis is one of the most prevalent foodborne helminthiases in Thailand, Laos, Cambodia, and Vietnam (*2,5–9*). For example, in Laos, opisthorchiasis is prevalent in the central and southern lowlands along the Mekong River, including Vientiane Municipality and Savannakhet Province, where the rates of *O. viverrini* egg recovery (mixed with some minute intestinal flukes) among residents along rivers were 53.3% (Vientiane) and 67.1% (Savannakhet) (*5,7*). In Cambodia, eastern localities (e.g., Kratie Province, 4.6% egg-positive rate) and southern localities (Kampong Cham Province, 24.0% egg-positive rate, and Takeo Province, 23.8%–47.5% egg-positive rates) along the Mekong River were found to be endemic foci (*8,9*). From 2 egg-positive residents in Takeo Province, 34 adult *O. viverrini* flukeswere recovered (*10*).

In our study, the *O. viverrini* egg-positive rate of residents in surveyed areas of Myanmar was 0.7%, much lower than the 4.6%–67.1% rates in Laos and Cambodia (*5–9*). Also, only 1 adult fluke was recovered in 1 egg-positive case, whereas 34 adult specimens were recovered in 2 residents in Cambodia (*10*). Thus, we concluded that the Yangon area of Myanmar has low-grade endemicity of *O. viverrini*.

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# LETTERS

# Nontoxigenic *Corynebacterium diphtheriae* Infections, Europe

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**To the Editor:** We read with interest the article by Dangel et al. analyzing nontoxigenic *Corynebacterium diphtheriae* infections in northern Germany during 2016–2017 (*1*). Among the cases, 2 patients originated from Poland; each experienced an invasive disease, 1 endocarditis and 1 sepsis. Poland and Germany are neighboring countries. In Poland, we also observed an accumulation of nontoxigenic *C. diphtheriae* infections during 2016–2017. In both countries, most infections were caused by isolates belonging to sequence type (ST) 8 biotype gravis, which we previously suspected of having increased pathogenic properties (*2*).

ST8 has been causing infection in Poland since 2004 and was isolated in Russia before that (*2*,*3*). However, the first ST8 isolate was not obtained in northern Germany until 2015, suggesting spread of pathogenic ST8 from eastern to western Europe. Comparing epidemiologic data from Poland during 2012–2017, we confirmed 48 cases of nontoxigenic *C. diphtheriae*, increasing from 3 cases in 2012 to 20 in 2017. As seen in northern Germany, most affected patients in Poland were male (>80%), and ≈30% of patients were homeless, alcohol addicted, or both. We did not identify HIV as a risk factor. We saw a sharp increase in cases during the time of the Dangel et al. report as well, from 10 cases in 2016 to 20 in 2017. Nevertheless, in Poland, 40% of isolates (19/48) during 2012–2017 were obtained from invasive infections, whereas in Germany only 9 isolates (≈12%) were obtained from cases with severe invasive complications. None of the cases in Poland were related epidemiologically.