**Taenia solium**

Cysticercosis, Irian Jaya, Indonesia

To the Editor: Cysticercosis, a tissue infection caused by accidental ingestion of eggs released from humans harboring the pork tapeworm, *Taenia solium* (TsCysti), is one of the most serious reemerging parasitic diseases worldwide (1). Taeniasis is an intestinal infection caused by the adult stage of the large tapeworm. Carriers of *T. solium* acquire infection through eating undercooked pork contaminated with cysticerci (larvae). Although most Indonesian people are Muslim and do not eat pork, infection with *T. solium* has occurred in some areas or islands where most local people are Christian or Hindu.

The area most affected by this infection is Irian Jaya, Indonesia, the western half of New Guinea Island (2–4). In field surveys conducted in 2000 and 2001, we found that 5 (8.6%) of 58 local people and 7 (11%) of 64 local dogs living approximately 1 km from the local capital city, Wamena, in Jayawijaya District, harbored adult tapeworms and cysticerci of *T. solium*, respectively (5,6). We have further seroepidemiologic data from 1996 and molecular confirmation of subcutaneous nodules (SCN) as cysticerci of the *T. solium* Asian genotype. We believe this organism is endemic in Wamena, in Jayawijaya District, harboring adult tapeworms and cysticerci of *T. solium* in people who live or work in this area.

In 1996 and 1997, we conducted an enzyme-linked immunosorbent assay (ELISA) that used glycoproteins purified from cyst fluid of *T. solium* cysticerci by preparative isoelectric focusing (fractions of pH 9.1) (8) in 2001. On the basis of serologic results, of 12 (70.6%) of 17, 20 (62.5%) of 32, and 12 (25.5%) of 47 of ES, SCN, and healthy groups, respectively, were infected with the larval stage of *T. solium*. Serologically positive rates increased to 83.3% (10/12) of people with subcutaneous nodules in the ES group. A follow-up study of seropositive persons in the healthy group in 1997 showed that five of eight persons had ES (two persons), headache (one person), or SCN in upper arm (two persons). Seropositive persons in all three groups (ES, SCN, and health) were considered to be infected with TsCysti. Persons of the SCN and healthy groups who showed optical density values higher than the cut-off value were considered to have asymptomatic TsCysti cases.

The local persons we examined ranged from 18 to 29 years of age (n=30), 30–44 years of age (n=36), and ≥45 years of age (n=30). Seropositive persons (n=12) from the ES group (n=17) were 18 to 29 years of age (40.0%, 2/5), 30–44 years (71.4%, 5/7), and ≥45 years (100%, 5/5). The prevalence of TsCysti did not vary statistically by sex (males 53.6% [37/69] versus females 33.3% [9/27], Pearson’s chi-square test, p=0.074).

That 14 persons confirmed to have subcutaneous cysticerci of *T. solium* were seropositive strongly suggests that the serologic test (ELISA) is highly reliable for detecting TsCysti in patients, whether their infection is symptomatic or asymptomatic. In contrast, one of the following scenarios was expected for cases in three of five persons in the ES group who did not have SCN and were seronegative: 1) the case was not due to TsCysti, 2) the case was caused by TsCysti but without antibody response, rather common in cases of a solitary cyst, or 3) the case was caused by TsCysti with calcified cysts and without antibody response. Twelve (approximately 40%) of seronegative persons from the SCN group (n=32) were expected to have cases of TsCysti without antibody response or to have calcified cysts without antibody response. Cases without antibody response would be most expected because of the heavily contaminated environment in Irian Jaya (3–6). However, further evaluation with computed tomography or magnetic resonance imaging scans is necessary. Based on serologic results and mitochondrial DNA confirmation of *T. solium* Asian genotype (3,7), we concluded that TsCysti was highly endemic in Irian Jaya. In 1969 when the country was governed by Indonesia, since the governing body came from Bali, the only area in Indonesia where...
TsCysti was exclusively endemic (2). The contaminated areas in Irian Jaya have increased from the central area (Paniai), to the east (Jayawijaya) (3), and then to the west (Manokwari), where 54 TsCysti cases have been reported (Papua Province Health Office Services, 1997, unpub. data). We wanted to know if taeniasis/cysticercosis had been introduced into the eastern half of New Guinea Island, called Papua New Guinea (PNG) (9). We had already serologically confirmed that 16 (3.0%) of 541 local residents and Irianese refugees in Alice River villages along the border in PNG had asymptomatic TsCysti (Ito et al., unpub. data). Follow-up surveys will be crucial in several other districts including Merauke District in Irian Jaya, PNG, and other islands such as Timor Island, where most of the population is Christian and many suspected cases have recently been reported by the District Health Office Services (10). Schoolchildren should also be checked so that cases can be detected and treated early. Sustainable education of the local community in Irian Jaya, Indonesia, and Papua New Guinea is also necessary.

Financial support was provided by a grant-in-aid from the Nissan Foundation and the Ministry of Education, Japan (09044279, 10557029, 11694259, 1255702414, and 14256001) (A.I.) and by the Japan Health Science Foundation (S.S.M.).

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References


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Recombinant Vaccine–Derived Poliovirus in Madagascar

To the Editor: Between October 2001 and April 2002, five cases of acute flaccid paralysis associated with vaccine-derived poliovirus (VDPV) type 2 isolates were reported in the southern province of the Republic of Madagascar. The first patient, an 11-year-old child from the urban district of Tolara, first experienced paralysis on October 29, 2001. Three other children, 6, 9, and 14 months of age from Ebakika village, in a rural district of Toliara, showed signs of poliomyelitis between March 21 and March 26, 2002. The last case-patient, a 20-month-old child from Ambanibazo village (6 miles north of Ebakika), came into contact with one of the three case-patients in Ebakika in March 2002, and symptoms developed on April 12, 2002 (1). None of the patients had been fully vaccinated against poliomyelitis.

Nine type 2 poliovirus (PV) strains were isolated. A restriction fragment length polymorphism (RFLP) assay, with three different genomic regions amplified by reverse transcription–polymerase chain reaction (RT-PCR) and four different restriction enzymes (HindI, DpnIII, Rsal, and Ddel) were used to characterize the PV isolates at the molecular level (2). The RFLP profiles of all of the isolates in the two capsid protein regions were identical to that of the type 2 strain of the oral polio vaccine (OPV) in the VP1-2A region (nucleotides 2872 to 3647) but slightly different in the VP3-VP1 region (nucleotides 1915 to 2883). The observed differences allowed us