

salted. In Japan, people have the habit of eating raw fish such as 'sushi' or 'sashimi', so they have more chance of infection with larvae of anisakid nematodes. Since the symptoms result from larval invasion of the gastrointestinal mucosa of patients, larval penetrability play an important role in the pathogenicity. Recently, using molecular biological methods, *Anisakis simplex* larvae can be separated three sibling species, namely, *A. simplex sensu stricto*, *A. pegreffii* and *A. simplex C*.

Objectives: The aim of this study was to investigate *Anisakis* larvae's penetrability in order to clarify tendency of the ability among the each sibling species.

Methods: We isolated *Anisakis* larvae from *Scomber japonicus* fish caught in the sea around Goto Islands (Nagasaki Prefecture, Japan) and the sea around Jeju Island (Korea). *Anisakis simplex* larvae identified by morphological features were used in the study. For identification of the sibling species, PCR-RFLP for ribosomal DNA internal transcribed spacer (rDNA ITS) regions was performed. The penetrability of the larvae were evaluated with the agar method which was previously reported (Kojima et al. Clinical Parasitology 2012, Vol. 23, pp. 63–65).

Results: One hundred *Anisakis simplex* larvae (third stage) were examined in the study. By the molecular biological method, it was demonstrated that all of the larvae were *A. pegreffii*. The mean penetration rates of the larvae were 69% in 2 hours and 78% in 24 hours. The larvae kept the penetrability even on the state of imperfect body or after the long term storage over 3 weeks in saline at 4 degrees centigrade.

Conclusion: These results demonstrate that *A. pegreffii* larvae have the high ability to penetrate and the penetrability is kept under cold storage conditions.

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Prevalence of immunity against tetanus and the efficacy of booster vaccination among Japanese travelers

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Introduction: Tetanus is caused by *Clostridium tetani*. It can be prevented by vaccination, which is especially important for overseas travelers. However, although a booster vaccination every 10 years is recommended, most Japanese adults do not receive it unless they have a physical injury or have to travel overseas.

Objectives: The aim of this study was to investigate the level of protective immunity against tetanus among Japanese travelers, which may provide valuable information for formulating recommendations for booster vaccinations.

Methods: In total, 113 Japanese travelers who received the tetanus toxoid at a travelers' clinic were recruited. Travelers who did not visit again and those whose samples could not be collected during the second visit were excluded. Finally, 96 participants were included. Informed consent was obtained from each participant, and 96 blood samples were collected twice, before vaccination and 3–5 weeks after vaccination. History of immunization against tetanus, including the DPT and DT vaccines, was determined from information obtained during the interview or from the immunization records.

Results: The pre-vaccination genomic mean titer for 96 participants was 1.07 IU/mL; further, 76% had a protective antitoxin level (>0.1 IU/mL), and 50% had a long-term protective antitoxin level (>1.0 IU/mL). Majority of the participants aged <40 years had protective immunity without receiving the booster vaccination, whereas only 30.8% of those aged >50 years (excluding participants who had received a tetanus booster in the past 10 years) had protective immunity. Among the 23 participants who did not have protective antitoxin levels (<0.1 IU/mL), the booster vaccination was efficient in 100% of the participants aged <40 years and in only 28.6% of the participants aged >50 years.

Conclusion: Although the tetanus antitoxin level decreases depending on the age, a booster vaccination clearly helps in increasing the protective antitoxin levels among Japanese travelers. Further, booster

vaccinations are highly recommended in individuals who have never been vaccinated against tetanus, especially elderly individuals aged >50 years, in order to prevent tetanus in travelers and residents in Japan.

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A report on 2 cases of *Paragonimus westermani* infection

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Introduction: We here report two cases of *Paragonimus westermani* infection caused by eating raw boar meat

Results: Case 1: A 69-year-old man was referred to our hospital with left pleural effusion. Eosinophilia in peripheral blood and pleural effusion were identified. The effusion was exudative with low pH, low glucose and high lactate dehydrogenase (LDH) levels. Case 2: A 69-year-old man was admitted to our hospital with abdominal pain. Chest CT showed a mass shadow in the right upper lobe and right pleural effusion. He had eosinophilia, but the eosinophil fraction of his pleural effusion was 7%. The effusion was exudative with low pH, low glucose and high LDH levels. Analysis of a transbronchial lung biopsy specimen of the mass lesion revealed prominent eosinophilic infiltration.

In both the cases, they had histories of eating raw boar meat, and *Paragonimus westermani*-specific IgG antibody titers were extremely high in their serum. Thus, *P. westermani* infection was diagnosed. After oral administration of praziquantel, their chest CT and eosinophilia were improved.

Conclusion: *P. westermani* is a parasite of freshwater crabs, and consumption of inadequately cooked crabs causes infection with this parasite. Wild boars are paratenic hosts of *P. westermani* and the infection in humans is also caused by eating raw or improperly cooked boar meat. Pulmonary infiltration with eosinophilia in the peripheral blood and pleural effusion, abdominal pain, and history of eating raw boar meat suggest *P. westermani* infection.

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Pre-travel health advice and area of residence among tourists who visited Cuzco, Peru in season January–February 2012

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Introduction: In trips to developing countries, millions of tourists are exposed to acquire infections, such as the traveler's diarrhea and return with them all over the World. This is the reason why pre-travel health advice offers preventive ways and recommendations to reduce risks and protect the health of the tourists and the population that is visited.

Objectives: Evaluate the association between pre-travel health advice as a prevention way and the traveler's diarrhea risk zone where the tourist resides.

Methods: We defined pre-travel health advice as the affirmative answer to did the tourist go to a consultation with a healthcare worker in travel medicine before travelling to Peru?; and to live in a low risk zone (LRZ) or non-low risk zone (NLRZ) to acquire traveler's diarrhea. We found 732 (37.9±16.3) tourists who had pre-travel health advice, and 1035 (37.9±14.8) that had not. Information was obtained from a database generated by a survey of tourists that visited Cusco in January-February 2012.

Results: We found that 92.5% (640) of residents from LRZs and 72.5% (700) from a NLRZs had a PMABT ($p < 0.001$, χ^2 test). Through regression analysis of General Linear Models we found: live in a LRZ