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Case Report

A Case Report of Intraperitoneal Granuloma due to Occult Infection with *Paragonimus* sp.

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Paragonimiasis used to be an important food-borne parasitic zoonosis in the central to the south-western part of Japan (Yokogawa, 1960). Miyazaki Prefecture, locating in the southeastern part of Kyushu district, has long been known as one of the endemic areas of paragonimiasis westermani and over 300 cases were found during the late 1950s to the early 1960s. After the extensive survey, selective treatment, and campaigns to eradicate paragonimiasis conducted by the local government begun in 1957, the prevalence of this disease drastically decreased within next 5 years (Hayashi, 1978). Still, a few new cases have been found sporadically in this area every year (Matsuoka *et al.*, 1986; Ichiki *et al.*, 1989; Ogata *et al.*, 1989; Nawa, 1991). In addition, patients having old granulomatous lesions caused by *Paragonimus* infection in the ectopic sites are found by chance during histopathological examinations of surgical specimens obtained from patients with non-parasitic diseases (Nabeshima *et al.*, 1991; Marutsuka *et al.*, manuscript in preparation). Here we report such a case of ectopic paragonimiasis with the calcified nodular lesion in the pelvic peritoneum which was found accidentally during postoperative pathological examinations for tumor metastasis of bladder carcinoma.

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Case Report

The patient is a 76 year-old female who was born and grown up in the southern part of Miyazaki Prefecture. She has never been to abroad. She has been treated for diabetes for over 15 years. She had been admitted to the regional hospital from 30 May to 22 June, 1994 due to pneumonitis, which were successfully treated by antibiotics. During her admission, malignant cells were found in her urine (Papanicolaou Class V) so that she was transferred to a general hospital in Miyazaki City for further examination. A sessile tumor was found in the trigonum by cystoscopy. Total cystectomy and ileal conduit was performed on 23 August 1994. Postoperative pathological examination revealed transitional cell carcinoma Grade 2 (T:2, V:0, Ly:0). During surgical operation, several lymph nodes and lymph node-like nodules in the pelvic peritoneum were extirpated for examination of metastasis. All lymph nodes examined were free from tumor cells. However, one of the nodules, about 1×1 cm, was not an lymph node but was an old cystic mass filled with necrotized materials surrounded by thick fibrous connective tissue (Fig. 1). Numerous parasite egg shells were seen in the necrotized mass together with the scattered cholesterin clefts (Fig. 2). The inside of the eggs were either empty or filled with necrotized mass and some eggs were calcified. The shells were thick and had a flattened operculum at one end (Figs.

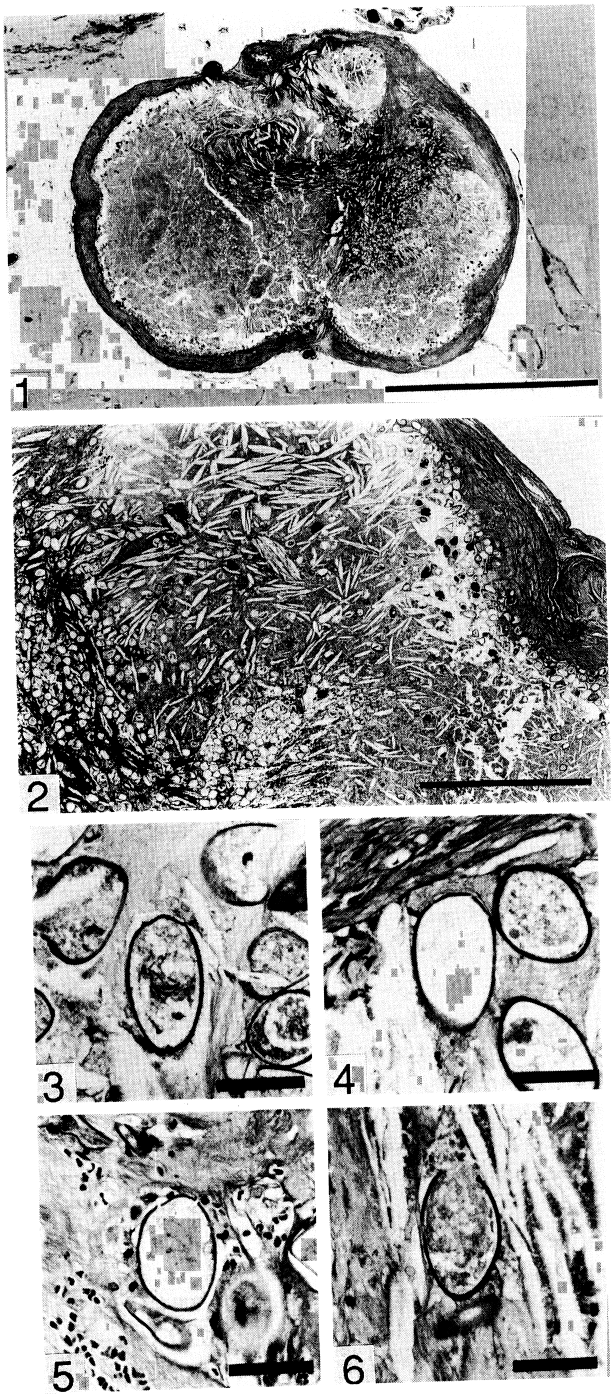

Fig. 1 Total view of the nodular lesion (Scale bar: 5 mm).
Fig. 2 Low-power view of the lesion (Scale bar: 1.0 mm). The cyst was filled with numerous parasite eggs and cholesterin clefts. Some darkely stained eggs were calcified.
Figs. 3–6 High-power view of the eggs (Scale bar: 50 μm).

3–6). Thickening of non-operculated end was observed in some eggs (Figs. 3–4). The average size of the biggest 20 eggs was 84.6 μm by 45.9 μm. From these morphological characteristics, they were identified as *Paragonimus* sp., most likely *P. westermani* eggs. Although immunoserodiagnosis was carried out to confirm histopathological identification of the parasite, neither an Ouchterlony's double diffusion test nor enzyme-linked immunosorbent assay (ELISA) using *P. westermani* or *P. miyazakii* antigens gave positive results.

Discussion

The patient reported here had not a past history of paragonimiasis. The nodular mass was an old cystic lesion without any signs of inflammation. All eggs did not contain live germ cells and some of them were calcified. Therefore, infection seems to have occurred fairly long time ago without causing any symptoms. Negative results of immunoserological tests also support this situation. Though the bodies of adult worms or their fragments were not seen in the lesion, this lesion seems to be formed by infection with mature adult worms and not due to the embolism of parasite eggs because the number of eggs were so numerous. *Paragonimus* species, especially *P. westermani*, is known to have an ability to become adult worms even in the ectopic sites (Yokogawa *et al.*, 1960), although the majority of other helminth species are, in general, unable to mature into adult stage in the ectopic sites.

Paragonimus is principally a parasite of the lung causing pulmonary paragonimiasis. However, this parasite often causes ectopic infections in various sites during its complicated migration route in the definitive host (Yokogawa, 1960). Brain, skin and peritoneal cavity are the common sites of ectopic paragonimiasis. Cerebral (Marutsuka *et al.*, manuscript in preparation), cutaneous (Ogata *et al.*, 1990) and hepatic (Nabeshima *et al.*, 1991) paragonimiasis cases were recently found in Miyazaki Prefecture. Among these, cerebral and hepatic cases were the old infections, whereas pulmonary and cutaneous cases were the fresh ones. Therefore, physicians working in this area should notice not only new infection but also old occult cases.

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