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Case illustrated

Paragonimus westermani as a cause of Löeffler's syndrome

Satoshi Furuya, Sayato Fukui*, Yoichiro Maekawa, Nozomi Aoki, Akihiro Inui, Toshio Naito

Department of General Medicine, Juntendo University Faculty of Medicine, Tokyo, Japan

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ABSTRACT

In 1936, Löeffler first recognized the association between a distinctive form of severe heart failure and marked eosinophilia. Most cases are caused by either parasitic infections or drugs; however, no cause has been identified in one-third of the patients [1]. This report presents a rare case of Löeffler's syndrome caused by the parasite Paragonimus westermani.

Case illustrated

The patient was an asymptomatic 54-year-old man who presented with abnormal chest radiography on medical examination and had no symptoms. At the consultation, his vital signs were as follows: Glasgow Coma Scale, E4V5M6; temperature, 36.8 °C; blood pressure, 130/88 mmHg; pulse, 92/min (regular); respirations, 16/min; and percutaneous oxygen saturation on room air (98%). Physical examination revealed mild inspiratory crackles in both the lower lung fields.

Chest radiography revealed infiltrative shadows in both lower lung fields, and cardiac enlargement was detected (Fig. 1). Chest computed tomography (CT) revealed pleural effusion, pericardial fluid effusion, and an infiltrative shadow in both lower lung fields (Fig. 2). Electrocardiogram revealed sinus and mild low voltage. The blood test results were as follows: white blood cell count, 12,100/μL; white blood cell fractionation, (neutrophil count 5311/μL; lymphocyte count 1936/μL; eosinophil count 4707/μL); immunoglobulin E, 2620 IU/mL; and C-reactive protein level, 2.58 mg/dL.

The main differential diagnoses included tuberculosis, malignant tumors, parasitic infections, coronavirus disease 2019 (COVID-19), and vasculitis. His intake history revealed that he had eaten Chinese mitten crab (*Eriocheir sinensis)* 11 months previously. The ova could not be found in the stool but multiple-dot enzyme-linked immunosorbent assay (ELISA) was slightly positive antibodies to *Paragonimus westermani* (*P. westermani*). Microplate ELISA revealed a high titer of *P. westermani*-specific immunoglobulin G. Therefore, we diagnosed *P. westermani* as the cause of Löeffler's syndrome. Vermicidal treatment (praziquantel 2.5 mg/kg 3 times a day for 3 days) was administered, and no conspicuous adverse events were observed. After vermicidal treatment, his eosinophil count became normal, and pleural effusion, pericardial effusion and infiltrate shadows on both lungs were improvement (Fig. 3).

In 1936, Löeffler first recognized the association between a distinctive form of severe heart failure and marked eosinophilia. The syndrome represents a hypersensitivity reaction of the lungs to various antigens, the most common of which are pollens, drugs, horse serum, certain helminths, parasitic infections, or drugs (antimicrobials, anticonvulsants, anti-inflammatories and immunomodulators); however, no cause is identified in one-third of the patients [1]. The main causes of parasitic infections are.

Ascaria, Ancyclostoma and Necator [2], and *P. westermani* is considered rare. Furthermore, indicators of *P. westermani* on radiography and CT include nodules, masses, infiltrative shadows, and

* Correspondence to: Department of General Medicine, Juntendo University Faculty of Medicine, 2-1-1 Hongo, Bunkyo-ku, Tokyo 113-8421, Japan.
E-mail address: sfukui@juntendo.ac.jp (S. Fukui).

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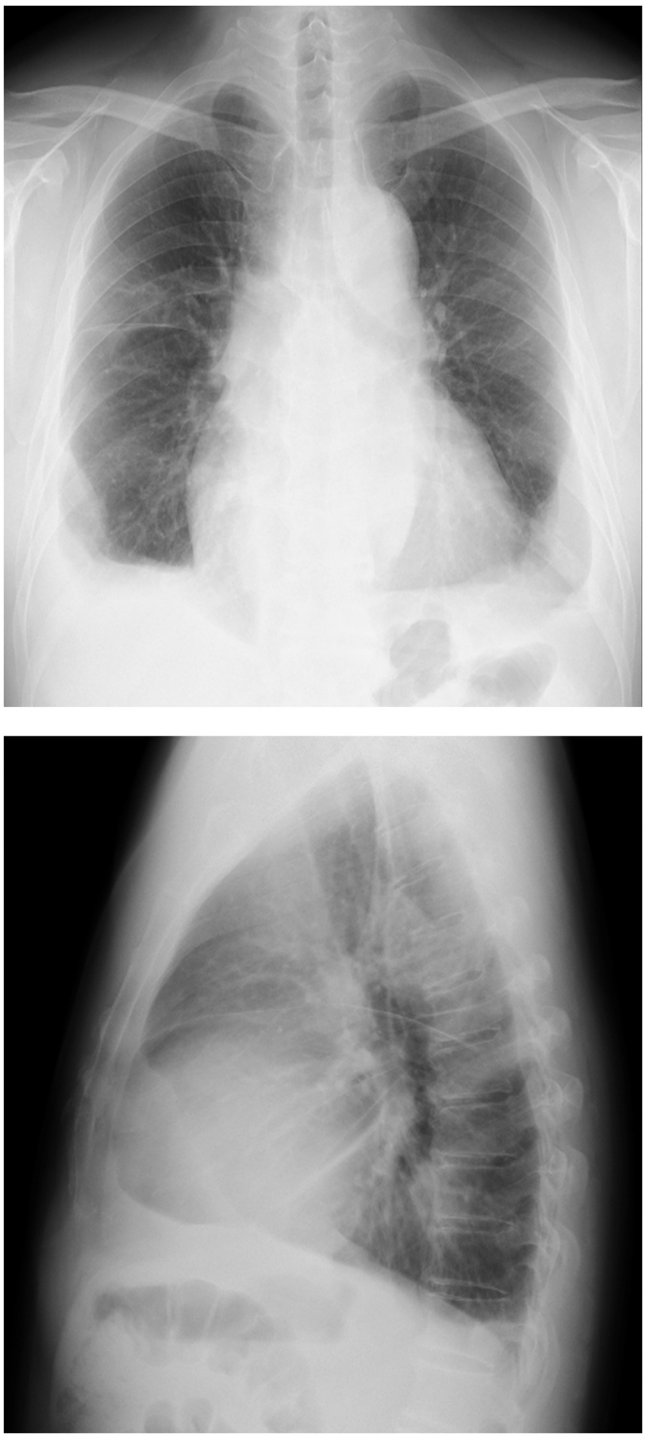

Fig. 1. Chest radiograph showing infiltrative shadows in both lower lung fields and cardiac enlargement.

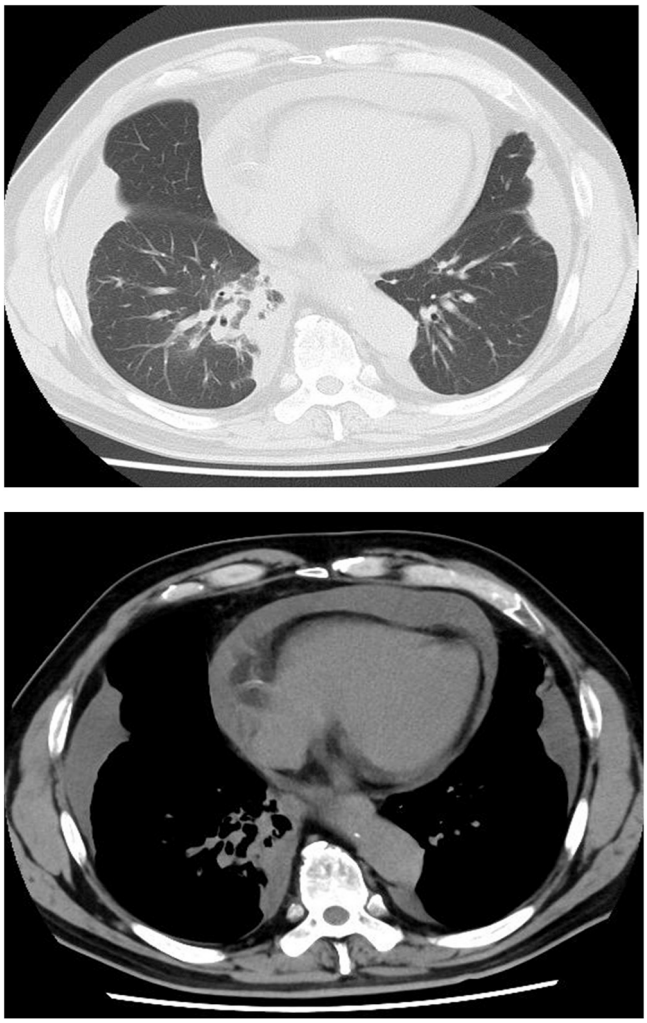

Fig. 2. Chest computed tomography image showing both pleural effusion and pericardial fluid effusion and the infiltrative shadow in the lower lung field.

pleural effusion [3,4]. Few reports indicates pericarditis, including Loeffler's syndrome [1]. Also, the rate of detection of ova of parasites was low (11.7%) and it did not detect even this case [4].

Finally, we want to emphasize that *P. westermani* is often misdiagnosed as tuberculosis or malignant disease [5] and should be considered in the differential diagnosis.

Ethics approval and consent to participate

No ethical approval was required for this publication.

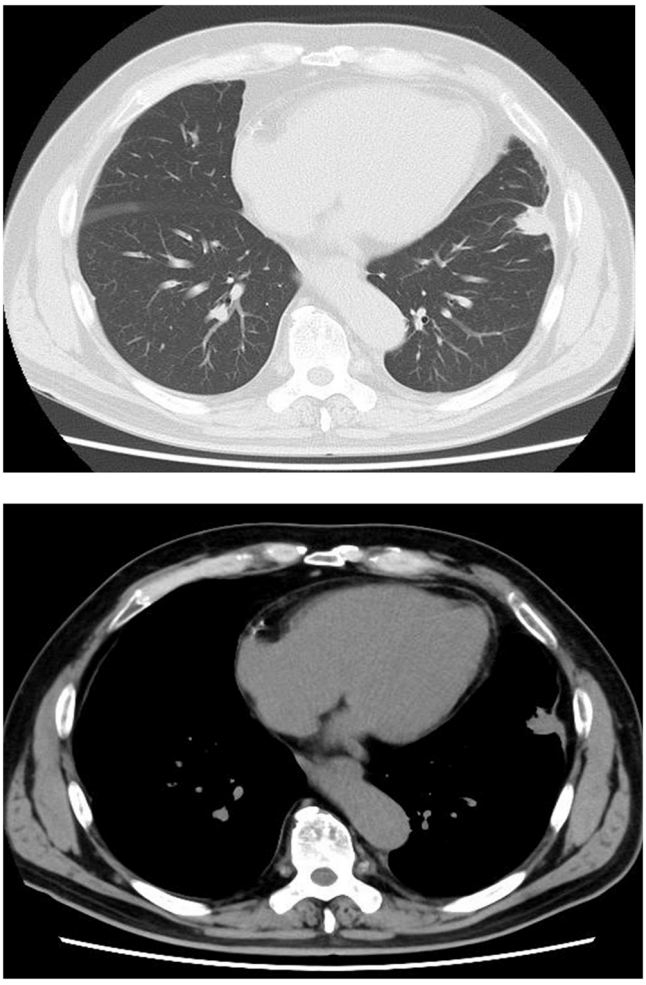

Fig. 3. Chest computed tomography image shows improvement 4 months after treatment.

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Authors' contributions

All authors treated the patients, drafted the manuscript, critically reviewed the manuscript, and approved its final version.

Declaration of Competing Interest

None declared.

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Consent

Informed consent was obtained from the patient.

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