

Letter to the editor

**Legionnaires' disease as an occupational risk related to decontamination work after the Fukushima nuclear disaster: a case report**

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We sincerely appreciate the comments from Yoshida regarding our case report of Legionnaires' disease (LD) in a patient engaged in decontamination work in Fukushima<sup>1)</sup>. As indicated, it is well-known that the white-blood-cell count does not commonly rise above 10,000 in patients with atypical pneumonia. However, this clinical feature pre-

sumably reflects pneumonias caused by *Mycoplasma pneumoniae*, which is the most common causal bacteria in atypical pneumonia<sup>2)</sup>. In some previous reports, the white-blood-cell count among patients with LD becomes as highly elevated as it does in other types of bacterial pneumonia<sup>3)</sup> (i.e., over 10,000), consistent with our clinical experience. Therefore, considering that the patient in our report was not immunocompromised by factors such as old age or pre-existing conditions such as diabetes mellitus, the probability that legionellosis developed simultaneously with another bacterial pneumonia is likely to be very low.

To address another point raised for further discussion, we agree that this was not a case of pandemic LD among decontamination workers, as only 3 LD cases have been detected among 30,000-40,000 decontamination workers. We understand Dr. Yoshida's suggestion that "it seems likely that the infection of these patients occurred in a non-occupational environment;" however, we do not have data to prove or deny any relationship between decontamination work and the development of LD. Furthermore, the fact the only 3 LD cases developed in decontamination workers does not deny the potential for a relationship between LD and the occupational environment, as LD patients with mild symptoms might be treated unintentionally, since clinicians tend to liberally prescribe antibiotics, especially new quinolones, to outpatients in Japan. Further, it is notable to reflect on the fact that there had been no reported cases of LD since 2004 in the north coastal area of Fukushima Prefecture, where our hospital is located, before our 3 cases were reported in 2015. Given these facts, it may be reasonable to consider that the development of LD was associated with decontamination work despite the lack of direct evidence for it. With regards to Yoshida's suggestion to look into the travel history of the 3 cases, we attempted to contact the 3 patients as well as their families. The family member of the patient reviewed in the case report mentioned that there was no travel history in that case, and unfortunately we could not contact the other patients or their families.

With respect to second suggestion, we agree that we were not able to directly prove the existence of Legionella bacteria in our case report. We also agree that characterization of organisms isolated from water systems and expectorated sputum by species and serogroup are ideal evidence for or against a causal association between occupational exposure and development of LD. However, in this case it was difficult to determine the type of Legionella bacteria that was involved in development of the disease, as there was no sputum specimen remaining. On the other hand, it is noteworthy that polymerase chain reaction

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(PCR) was used to diagnose LD in only 1 of 3 cases because the urinary antigen test was negative, while the urinary antigen test was positive in the other 2 cases of LD. Therefore, it is possible that the species of Legionella bacteria was different between cases, considering the fact that these 3 cases of LD developed in different places and times.

*Conflicts of interest:* None declared.

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