Correspondence

Legionella pneumonia as a rising public health threat in Argentina: Is it the time to worry?

Legionellosis is a well-known disease entity and it has been a cause for many respiratory disease outbreaks throughout the world. Clinically, Legionellosis is a collective term under which two diseases are identified and caused by the gram-negative bacteria of the genus Legionella, namely, Legionnaires’ disease which is the most fatal one, and Pontiac Fever, which is less serious disease compared to Legionnaires’ disease [1,2]. Most reported cases of Legionellosis are caused by an aerobic gram-negative bacillus Legionella pneumophila, a common pathogen of community-acquired and hospital-acquired pneumonia outbreaks with symptomology of breathing difficulty, body ache, fever, and some patients may also suffer from diarrhoea, and mental manifestations [3]. However, all Legionella species may cause the disease. This disease was first reported in 1976 after a deadly pneumonia outbreak among the American Legion veterans’ group in the United States. has been linked to contaminated water and unclean aeration systems [4].

The aetiology of Legionnaires’ disease indicates Legionella belongs to family Legionellaceae and it is comprised around 70 serogroups with the Legionella pneumophila serogroup as the most prominent and common strain with more than 50 species. The distribution of Legionella is through aerosolized water particles, air conditioning cooling systems, water distribution and storage systems, as well as natural water systems like rivers and lakes. The severity of Legionellosis infection may vary from mild to serious and occasionally fatal. People who are smokers, have a compromised immunity status, have chronic pulmonary disease, and those who are 50 years and above, are more prone to Legionnaires’ disease upon inhalation of aerosolized water from water sources contaminated with Legionella.

The generalised current outbreaks of Legionella in Argentina displayed the symptomology includes fever, mild cough, loss of appetite, headache, malaise, and lethargy [5]. The incubation period of Legionnaires’ disease, ranges from 2 to 10 days and it causes community- and hospital-acquired pneumonia; and it may cause outbreaks of public health significance. In immunocompromised patients, the mortality rate may be in the range of 40–80% in immunosuppressed patients with no sufficient treatment, depending on the severity of the clinical status. In old people, the mortality rates can vary from 10 to 50% [6]. Guzzi indicated that “the infection is treated with antibiotics (levofloxacin and macrolides) and treatment of the environment in which it develops is required for its eradication. Despite the availability of treatment for Legionnaires’ disease, a vaccine is not available yet.

Early diagnosis and treatment are important for survival of patients. In suspicious patients of Legionella urine antigen testing the Legionella pneumophila serogroup is expected and sputum culture were recommended [7]. Blood culture examination and seroconversion tests can be conducted to complement the diagnosis of Legionella infection as per World Health Organization (WHO) recommendation. The WHO reported the negative tests at Argentina’s national lab for several respiratory viruses and bacteria. But, the detailed DNA testing on two bronchoalveolar lavage samples were consistent with the suspected pathogenic Legionella pneumophila species [8].

1. Outbreak in Argentina, and New Jersey

Argentine Ministry of Health of Tucumán province notified the World Health Organization (WHO) on August 29 about the cluster of six cases of bilateral pneumonia outbreak lacking etiological cause. The private sanatorium in San Miguel de Tucumán city, was reported as an initial point of this outbreak [9]. Among these 6 cases, 5 were the health workers and one patient who was admitted to the clinic for an unrelated condition and then subsequently to the intensive care unit after developing pneumonia. The bilateral pneumonia was accompanied by fever, myalgia, abdominal pain, and dyspnoea in all cases. Further, on 1 September 2022, another 3 cases with an age of 30–44 years were reported with similar onset of symptoms ranging between 20 and 25 August 2022 [10]. Among 2 and 3 September 2022, another 2 more additional cases in 64-year-old male and 81-year-old males were reported with comorbidity carrying both stroke and pneumonia, and similar clinical symptoms [11]. As recent cases on 3 September 2022, total 11 cases of health workers from one private health facility in the city of San Miguel de Tucumán were identified. Among 11 cases of an average age of 45 years, 4 deaths (3 health workers) were reported. In these 11 cases, 8 were health workers with 3 deaths and 3 were patients. Till 6 September, in total, 22 infected individuals, 6 deaths have been reported. The analysis pattern, approaches and the strategies to combat and overcome the outbreak of Legionella bacterium were discussed among Centre for Disease Control and Prevention (CDC) and the health minister.

The search measures for positive cases are specifically targeting individuals from August 2022 onwards. This includes patients and their caregivers along with healthy personnel who have either undergone surgical interventions in any another private clinic or if they confirm the symptoms of cold, fever and respiratory infections not specifically indicating both lungs (bilateral) pneumonia. Nevertheless, the nature of the infection and its transmission mechanisms, indicates the less possibility of the expansion of legionella outbreak.

Another recent outbreak was reported in New Jersey, Mercer County, Hamilton Township, which was supplied by water facility through Trenton Water Works (TWW). Two additional cases were described, respectively in April 2022 and December 2021 followed by 2 cases of Legionnaires’ disease reported by New Jersey based health officials in August 2022. Of the four, one individual has died. The New Jersey Department of Health (NJDOH) reported approximately 250–350 cases of Legionnaires’ disease every year. To overcome the expected outbreak, public health departments in New Jersey regularly performs
identification of suspected outbreaks in clusters or communities followed by the notification to infected individuals in order to take preventive measures to reduce their risk of Legionnaires’ disease. Hamilton Township Division of Health and NJDOH promoted homes tested for Legionella through water samples collection from homes supplied by TWW which confirmed the presence of Legionella, in cold water samples while the collection of treated drinking water. NJDOH acclaims and request to residents and business owners to follow the best practices to maintain building water systems, building plumbing system to maintain their household in order to overcome the high rate of risk against Legionella growth. Further, community-acquired and healthcare-associated pneumonia, among residents were the two important factors that require monitoring by healthcare professionals during the evaluation of patients in society. As per suggestions of state epidemiologist, regular flushing of tap water, cleansing showerheads, and water heaters maintenance may aid in reducing risk of infections.

2. Strategy to control in Argentina

As per statement of the National Director of Epidemiology and Strategic Information such outbreaks can be easily regulated through transparency in sharing information at public platform as well as the promptness to handle the alarming situation. The investigation of identification of sources, new cases, contact tracing, clinical care, perpetuation of controls and regulatory measures at laboratory level and the current and futuristic measures to prevent new infections and improving infection were recommended. However, as reported by WHO website, in accordance with current situation and information about this outbreak in Argentina, the application of any restriction and hindrance on travel and trade with Argentina is prohibited [12].

Additionally, various measures can be implemented to reduce the risk of Legionella species growth in water systems, thus, their spread as well. Some of which are: avoiding water stagnation in water systems, interrupt the bacteria reproduction by interfering with the thermal danger zone of water for the Legionella growth, along with regular risk and safety assessment of water systems.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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