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EDITORIAL

Four cases of nontravel-related leptospirosis in Oman: A call for action



Leptospirosis is a zoonotic infection and is considered an emerging infectious disease [1]. It is most common in tropical and subtropical areas with high rainfall or high temperature. The incidence of leptospirosis ranges from 0.1–1/100,000/y in temperate climates to 10–100/100,000/y in humid tropical climates [2]. Most reported cases have severe manifestations, for which mortality is >10% [3].

Epidemics of leptospirosis may be associated with changes in human behavior, animal or sewage contamination of water, changes in animal reservoir density, or may follow natural disasters [3].

The first case of leptospirosis with co-infection of dengue was reported in Oman in 2008 [4]. The first local case of leptospirosis in Oman was reported from the Dhofar region in October 2010 through a surveillance system: a 21-year-old Omani female was admitted to a local hospital with a 2-day history of fever, vomiting, headache, and skin rash; she was found to have a highly deranged liver function test, thrombocytopenia, renal impairment, and bilateral lung opacities in her chest X-ray. In June 2011 and July 2011, two other human cases were reported; one in a 32-year-old man and the other in a 31-year-old woman. The fourth case was reported in February 2012 in a 45-year-old man. All these four cases were found to be IgM positive by Panbio *Leptospira* enzyme-linked immunosorbent assay; however, microscopic agglutination test results were not available for any of these cases, and this was considered one of the limitations in the early diagnosis of

leptospirosis. However, detailed epidemiological investigations were carried out soon after, including field visits and interviews with the patients and their families. The investigators found no history of recent travel outside the country, contact with animals, or drinking of raw water or milk in these four cases. However, all four cases had a history of visits to the Itteen area in Salalah in the Dhofar region in the southeast of Oman, and developed the infection within the incubation period of leptospirosis in a time frame that suggested that the illness was acquired during their visit to Salalah. Since March 2012, no additional cases of leptospirosis were reported in the country. In Oman, water samples are routinely collected to detect *Escherichia coli*, *Shigella*, *Salmonella*, and *Vibrio cholera* infections, but tests to detect leptospirosis infection in water samples are not carried out, and this remains another limitation in its early diagnosis and prevention.

The Dhofar region is known for the Khareef season that extends from June to September every year. This period is characterized by plenty of rainfall and high humidity. More than 500,000 tourists visit Dhofar during this period, including tourists from leptospirosis endemic countries.

Livestock is imported to the Dhofar region from leptospirosis endemic countries such as Yemen and Somalia. This case study indicates that the Itteen area in Salalah could probably be an epidemiologically important source of infection, but this needs additional studies for confirmation. Besides, the Khareef season is characterized by extensive rainfall runoff and wet soil everywhere, making it impossible to confirm the exact source of infection

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from specific areas in Salalah, as no water testing is performed for leptospirosis.

Environmental cleanliness, availability of safe drinking water, and prompt garbage management during the Khareef season are effective control measures to reduce leptospirosis infection. In addition, close collaboration between veterinary services and the Ministry of Health is recommended to promote planned immunization of livestock. There is also a need to increase awareness about this disease among the public and healthcare providers. A study is needed to estimate the *Leptospira* excretion rate among cattle in the Dhofar region and if the prevalence is found to be high, then Oman should consider mandatory screening of livestock (for leptospirosis) imported from endemic countries. Water sources can be tested during the Khareef season to identify possible leptospiral infection.

To the best of the author's knowledge, these are the first local cases of nontravel-related leptospirosis reported in Oman. This should prompt the local health and veterinary services to be vigilant about local cases of leptospirosis and the need to collaborate and establish the appropriate measures to prevent outbreaks of leptospirosis especially during the Khareef season.

It is very important to establish a leptospirosis national control program with joint efforts between veterinary, human services, and other sectors concerned. The pillars of the program should be public education on mode of transmission and prevention, control of rodents and segregation of infected animals, and immunization among pets. Environmental improvements such as sanitation and treatment of potentially contaminated water are also the main preventive measures. It is essential to consider the protection of high-risk groups including animal handlers by providing them with protective equipment such as boots and gloves [5].

In conclusion, four nontravel-related cases of leptospirosis from the Dhofar region in Oman have been presented. It is to be noted that all these infections occurred during the Khareef season. This should prompt the local health and veterinary services to be vigilant about local cases of leptospirosis and to strengthen their surveillance systems. In addition, establishing public health measures to prevent outbreaks of leptospirosis during the Khareef season is recommended.

Conflicts of interest

The author declares no conflicts of interest.

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