



Pigeons As A Carrier of Zoonotic Diseases To Humans

Dr. Syedah Asma Andrabi^{1*}, Dawoud Aamir Nehru²

Teaching Associate, Dept. of Veterinary Pathology, COVS Rampura Phul, Guru Angad Dev Veterinary And Animal Sciences University (GADVASU), Ludhiana (Punjab)

*Corresponding Author: syedahasmaandrabi@gmail.com

DOI - <https://doi.org/10.5281/zenodo.13629666>

Received: August 31, 2024

Published: September 03, 2024

© All rights are reserved by **Syedah Asma Andrabi**

Introduction:

Pigeons scientifically named as *Columba livia* are a member of order *Columbiformes* and family *Columbidae*. Their association with humans dates back to prehistoric times. Since time immemorial pigeons were used as a source of communication even in world wars due to their unmatched homing instincts. These avian species have been either kept in captivity or domesticated and properly trained for sport purposes and reared for meat purposes as well (Santos et al., 2020). Pigeon racing is popular sport, which has started developing into multimillion-dollar industry. Because of their closeness to the humans and their ability for indoor nesting, they can lead to spread of various zoonotic diseases (Perez-Sancho et al., 2020).

Diseases Transmitted By Pigeons In Humans:

Pigeons can transmit various infections to humans either via inhalation or consumption of improperly cooked meat. Some of the important pathogens include *Cryptococcus* species, *Coxiella burnetii*; *Toxoplasma* species, *Campylobacter* species, *Histoplasma*, *Chlamydia* and *Escherichia coli* O157 (Haag-Wackernagel and Bircher 2010). In addition, human infection by pigeon paramyxovirus has also been reported in people with closer proximity to pigeons (Cui et al., 2023).

Histoplasmosis:

It is caused by the fungus *Histoplasma capsulatum*. The fungus thrives well in damp soil especially in pigeon droppings. The spores of fungus enter via respiratory tract and cause flu like symptoms which includes chills, fever, coughing, fatigue and myalgia. The infection is likely to be subsided on its own by taking symptomatic medications, However, in immunocompromised patients infection can become quite deadly (Kauffman et al., 1978)

Cryptococcosis:

The cause of cryptococcosis is a yeast called *Cryptococcus neoformans*. The transmission route is similar to

histoplasmosis. Disease is clinically presented in respiratory form or encephalitic form especially in immunocompromised patients. In pulmonary/respiratory form symptoms include coughing, fever, chills and angina (chest tightening). If pulmonary symptoms are neglected and not treated well on time, spores may reach brain and other vital organs via hematogenous route and can lead to secondary complications like numbness in extremities, hydrocephalus and confusion. In severe cases meningitis can occur (Tugume *et al.*, 2023)

Psittacosis:

Psittacosis is commonly known by the name parrot fever. The disease is caused by *Chlamydia psittaci*, which is a gram negative, obligate intracellular bacteria. The rate of spread of infection from pigeons to humans is rapid and usually occurs via infected droppings or handling diseased birds. Symptoms associated with the disease are usually nonspecific and include unproductive cough, myalgia, skin rashes. However, most important presentation of human psittacosis is community-acquired pneumonia (CAP) (Crosse 1990).

Colibacillosis:

The disease occurs due to infection by *Escherichia coli* which is a gram negative rod-shaped bacteria commonly associated with food poisoning. However, infections by pigeons are not uncommon. The likely route of transmission is ingestion and infection is usually of low grade. So, the infection subsides on its own but if not the symptoms include severe abdominal cramps, nausea, diarrhoea.

Salmonellosis:

Salmonellosis (typhoid fever) is commonly transmitted by direct contact with infected birds or through domestic cats that feed on infected birds. The agent responsible for salmonellosis is bacteria *Salmonella spp.* The infection is characterised by gastrointestinal symptoms that include diarrhoea, nausea, vomiting, cramps in the abdomen.

Q-fever:

Q- fever is caused by Rickettsia named as *Coxiella burnetii* which is obligate intracellular, gram negative bacteria with main reservoirs as animal, birds and ticks. Infection in humans usually occurs by direct contact with infected aerosols or droppings of pigeons. Q fever may be manifested as an acute disease in humans characterized by hepatitis, pneumonia or as a chronic disease mainly manifested by endocarditis (Maurin 1999)

Prevention:

- Since pigeon droppings are a main source of infection to humans, it is better to prevent pigeons from visiting roofs.
- This can be achieved by pigeon proofing the houses in order to maintain safety.
- Use of pigeon spikes, optical gels and bird netting should be appreciated.
- Additionally, regular cleaning of roof tops to prevent pigeon nesting and roosting should be done.

- While cleaning, protective clothing, disposable gloves and boots should be worn.
- A respirator is appreciated to prevent infected dust inhalation.

Conclusion:

- Although, zoonotic diseases from pigeons is a cause of public health concern, still the problem is underestimated due to nonspecific symptoms related to the infections.
- Additionally, microbiological assessments related to pigeon diseases are incorporated only if the patient is severely ill.
- The conditions which favour the maximum transmission of infectious diseases from pigeons to humans is frequent contact with pigeons and poor hygiene practices.
- Moreover, raising public awareness about the disease reporting in pigeons as well as humans to their local veterinary/medical practitioners can significantly help in reducing the further transmission.

References:

Crosse BA. Psittacosis: a clinical review. (1990). *Journal of Infect.* 21(3):251–9.

Cui S, Xiong H, Feng Z, Chu Y, Que C, Qin J, Pan Y, Yu K, Jia L, Yao X, Liao J, Huo D, Guo C, Zhao H, Xu M, Tian Y, Peng Q, Li F, Xu H, Hong R, Zhang D, Wang G, Yang P, Gao GF, Wang Q. (2023). Severe pigeon paramyxovirus 1 infection in a human case with probable post-COVID-19 condition. *Emerg Microbes Infect.* Dec;12(2):2251600.

Haag-Wackernagel, D., Bircher, A.J. (2010). Ectoparasites from feral pigeons affecting humans. *Dermatology.* 220, 82–92.

Kauffman, C.A., Israel, K.S., Smith, J.W., White, A.C., Schwarz, J. and Brooks, G.F., 1978. Histoplasmosis in immunosuppressed patients. *The American journal of medicine*, 64(6), pp.923-932.

Maurin M, Raoult D. Q fever. (1999) *Clin Microbiol Rev.* Oct;12(4):518-53.

Perez-Sancho, M., Garcia-Seco, T., Porrero, C., Garcia, N., Gomez-Barrero, S., C_x0019_amara, J.M., Dominguez, L., A_x0019_lvarez, J. (2020). A ten-year-surveillance program of zoonotic pathogens in feral pigeons in the City of Madrid (2005–2014): the importance of a systematic pest control. *Res. Vet. Sci.* 128, 293–298.

Santos, H. M., Ching-Yi Tsai, Gail Everette M. Catulin, Kim Chloe G. Trangia, Lemmuel L. Tayo, Hung-Jen Liu, Kuo Pin Chuang. (2020). Common bacterial, viral, and parasitic diseases in pigeons (*Columba livia*): A review of diagnostic and treatment strategies, *Veterinary Microbiology*. Volume 247, 108779, ISSN 0378-1135.

Tugume, L., Ssebambulidde, K., Kasibante, J., Ellis, J., Wake, R.M., Gakuru, J., Lawrence, D.S., Abassi, M., Rajasingham, R., Meya, D.B. and Boulware, D.R. (2023). Cryptococcal meningitis. *Nature Reviews Disease Primers*, 9(1), p.62.