



LETTER TO THE EDITOR

Recent updates on langya virus

Ruby Gangwar, Arvind Kumar, Abrar Ahmed Zargar, Hardik Kumar, Amit Sharma, Ranjeet Kumar

Department of Pharmacy Practice, ISF College of Pharmacy, Moga, Punjab, India

ABSTRACT

In this review, we discussed about the recent outbreak of langya virus (layV). After the major viral outbreak of Covid-19, a newly identified layV was first identified in northeastern provinces of Shandong and Henan in 2018, it, also known as langya henipavirus, belongs to the *Paramyxoviridae* virus family of single-stranded ribonucleic acid (RNA) viruses that cause different types of viral infections. From 2018 to 2022, a total of 35 reported incidents were either farmers or workers in factories and it was potentially the pathogens in 26 patients. Transmission of the virus is likely to occur from animals to humans. The presence of the virus and its RNA was identified mostly in shrews, indicating that shrews are the virus's natural reservoir. The information was gathered from Google Scholar, PubMed, ResearchGate, World Health Organization (WHO) website, and other web pages from October 2022 to January 2023. The main aim of this study is to provide current information and awareness about layV to society, health-care professionals, researchers, and academicians on this disease, etc. If people are aware of this disease, then they can handle and prevent themselves. For the prevention for this disease, we include all the relevant information about layV symptoms, prevention, etiology, transmission, epidemiology, and treatment according to the WHO. This paper is helpful for future point of view because if on one takes it seriously then may be in the future, it will become a severe outbreak like Covid-19. In a world where outbreaks like COVID-19 and monkeypox occur, we must keep an eye out for developing infectious diseases like layV.

KEY WORDS: COVID-19, Henipaviruses, Langya virus, LayV, Viral disease outbreak, Zoonotic disease

INTRODUCTION

A newly identified langya virus (layV) was first identified in northeastern provinces of Shandong and Henan in 2018, it, also known as langya henipaviruses, belongs to the *Paramyxoviridae* virus family of single-stranded ribonucleic acid (RNA) viruses that cause different types of viral infections. It is also related to the hazardous viruses Nipah and Hendra.^[1,2] It can cause respiratory symptoms such as fever, cough, and drowsiness, but it has not yet been linked to any human deaths.^[3] Patients who tested positive were farmers who reported coming into touch with shrews within a month of developing symptoms. Fever, lethargy, cough, lack of appetite, muscular discomfort, nausea, headache, and vomiting are all symptoms of the disease.^[1] According to evolutionary

virologists, this virus is transmitted by shrews, which may have infected humans directly or through an intermediate species. The virus was also detected in 2% of domestic goats and 5% of dogs. The virus was the only possible pathogen discovered in 26 of the 35 patients, suggesting that "langya was the reason of febrile illness."^[4-6] The virus causes low risk to people, according to the researchers, but it shares genetic material with the Hendra virus and the Nipah virus, two other henipaviruses that infect people and cause life-threatening respiratory infections. Many other henipaviruses have been found in bats, rats, and shrews from Australia to South Korea and China, but

Address for Correspondence:

Dr. Amit Sharma,
E-mail: choice.amit@gmail.com

Access this article online

Website:

<http://isfcpharmaspire.com>

DOI:

10.56933/Pharmaspire.2023.15115

Date of Submission: 13 April 2023

Date of Revision: 26 April 2023

Date of Acceptance: 30 May 2023

only Hendra, Nipah, and now layV have been shown to infect people.^[7,8]

EPIDEMIOLOGY AND TRANSMISSION

The first evidence of layV human transmission was discovered in China in December 2018 when a 53-year-old farmer reported to a hospital in Shandong province with fever and a history of interaction with animals within a month of symptom start.^[7,9] Only 35 people have developed the illness since 2018, indicating that there was no link between any of the instances. There is presently no evidence that the virus may be transmitted from person to person.^[10] More than 25% of the 262 shrews confirmed cases for layV antibodies, whereas 2% of domestic goats and 5% of dogs also tested positive, suggesting that shrews were a viral source.^[4,7] Shrews had a greater prevalence of layV RNA than rodents, domestic and companion animals (dog), and humans, indicating that they are key reservoirs of this virus.^[11] Several virologists assume that it is transmitted straight to humans or through an intermediary animal, as none of the cases appear to be connected.^[7] There was no indication of the virus spread between persons, according to the findings, since there were no clusters of cases in the same family, during a short time span, or in close geographical vicinity. The study only traced contact on 15 family members of 9 ill people, making it difficult to determine how the people were exposed. Furthermore, Deputy Director-General Chuang Jen-hsiang of Taiwan's Centers for disease control claimed that human-to-human transmission of the virus has not yet been reported Figure 1. The 35 afflicted people had no intimate relationship or a shared history of exposure.^[12-14]

CLINICAL SYMPTOMS

layV is primarily affected farmers, and there are no obvious links between the cases. Coughing and severe pneumonia are among the symptoms.^[15] Those affected with layV nearly always had fever, as well as respiratory symptoms including coughing and tiredness, but nobody died as a result.^[4,7] Out of the 35 instances of layV infection detected in Shandong and Henan provinces, 26 showed symptoms such as fever, cough, drowsiness, irritability, lack of appetite, headache, muscular pain, nausea, and vomiting all are mentioned in Figure 2.^[16] All 26 instances had a fever, 54% complained of lethargy, 50% coughed, and 38% felt nauseous. Furthermore, 35% of the total population of 26 suffered nausea, vomiting, and persistent headaches.^[17,18] Furthermore, the researchers revealed that certain affected individuals had leukopenia, or a deficiency of white blood cells required by human bodies to resist infection, which was present in more than half of the patients, or 54% of the cases. Platelets, the blood-clotting cells, were found in low numbers in 35% of patients, one-third (35%) suffered liver function problems, and 8% experienced renal function issues.^[3]

DIAGNOSIS

A reverse transcription-polymerase chain reaction (RT-PCR) targeting layV L gene RNA has been created. The application of reverse transcriptase-polymerase chain reaction in combination with nested RT-PCR and Sanger sequencing of the amplified L gene fragment aided in the identification of layV RNA. Indirect immunofluorescence immunoglobulin G antibody identification test targeting layV has also been performed for diagnostic purposes. The samples required include serum, blood, and throat swabs.

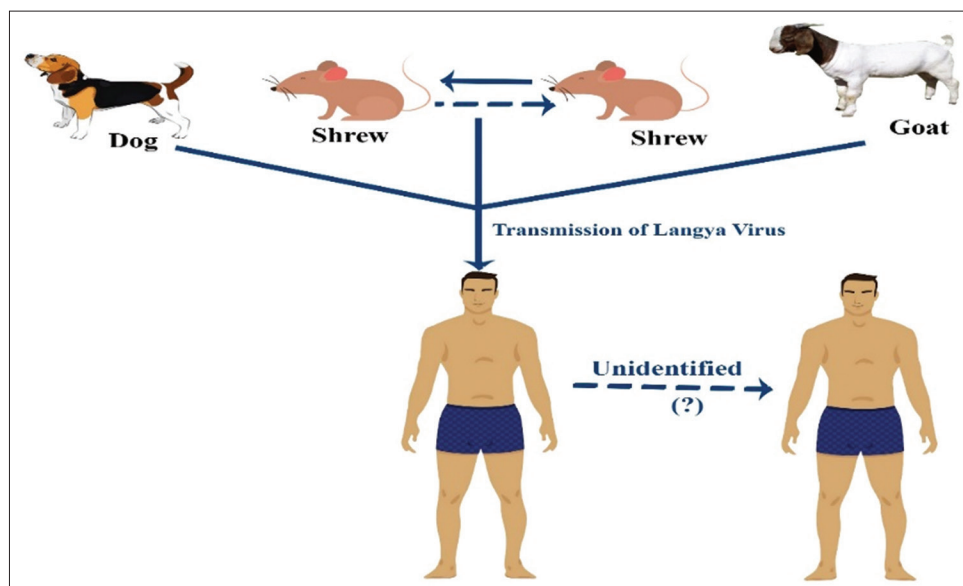


Figure 1: Transmission of langya virus

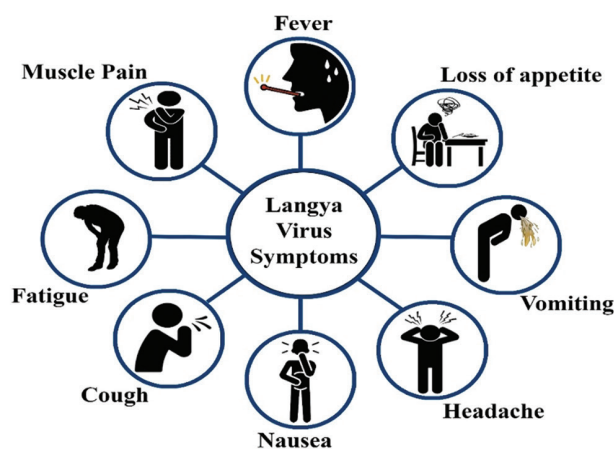


Figure 2: Symptoms of langya virus

Sera in domestic animals and dogs, as well as tissue, gut contents, and urine samples from rats and shrews, were tested for monitoring purposes.^[3,11,17]

TREATMENT AND PREVENTIVE MEASURES

Avoid contact with sick bats or pigs, keep hands clean, stop shaking hands and hugging people, keep a safe distance from others, especially in closed spaces, and cover coughs and sneezes. There are no approved therapies or vaccinations for henipaviruses. Several antiviral drugs have been tested in animal experiments, and ribavirin may be a useful treatment alternative. This medication has been reported to be effective in RNA virus infections, particularly those involving respiratory difficulties. Ribavirin, when combined with the antimalarial medicine chloroquine, was shown to be effective in treating Hendra and Nipah virus infections, showing that this treatment combination can be utilized to suppress layV infection if necessary.^[19-22]

CONCLUSION

layV is a new virus found in China and may be in other countries but not yet reported and it has produced mild-to-moderate symptoms. It is similar to Nipah and Hendra viruses. According to a number of previously published studies, there is no approved vaccine or other treatment is available for the prevention of the layV, but some studies show and confirmed a few numbers of drugs are used to prevent fever but not capable of fully prevent of this disease. In this review, we are trying to provide current information about layV to society, health-care professionals, researchers, and academicians, using different types of pre-published studies, letters, news, World Health Organization outbreaks on this disease, etc. in the current situation, and we found 35 active cases in China according to New England Journal, the virus is identified in patients but there is a possibility to transmission this virus

person to person but the actual reason is still unidentified how the virus is transmitting. Worldwide where outbreaks such as COVID-19 and monkeypox, we must keep an eye out for developing infectious diseases like layV. There is a need to check out this virus to secure it for the future because until the vaccine is not developed the patient suffering from this virus is in very danger. That's we hope our review is helpful to the various authorities and agencies to help in the decision-making process from recover this viral disease. Moreover, we must prepare in advance by establishing proper preventative measures and proactive control strategies to prevent its potential spread to other countries and regions.

ACKNOWLEDGMENT

We thank all the authors for allowing us to share their details and thank ISF College of Pharmacy, Moga, Punjab.

AUTHORS CONTRIBUTION

Dr. Amit Sharma and Ruby Gangwar contributed to the conceptions or design of the manuscript and manuscript writing. Ruby Gangwar is the first and main author of the manuscript writing Arvind Kumar, Abrar Ahmad Zargar and Hardik Kumar supported manuscript writing Ranjeet Kumar reviewed the final manuscript and gave suggestion.

FUNDING SOURCE

There are no funding sources for this report.

REFERENCES

1. Sanchez S, Ly H. Langya henipavirus: Is it a potential cause for public health concern? *Virulence* 2023;14:2154188.
2. Eaton BT, Broder CC, Middleton D, Wang LF. Hendra and Nipah viruses: Different and dangerous. *Nat Rev Microbiol* 2006;4:23-35.
3. Zhang XA, Li H, Jiang FC, Zhu F, Zhang YF, Chen JJ, *et al.* A zoonotic henipavirus in febrile patients in China. *N Engl J Med* 2022;387:470-2.
4. Choudhary OP, Fahrni ML, Metwally AA, Saied AA. Spillover zoonotic 'Langya virus': Is it a matter of concern? *Vet Q* 2022;42:172-4.
5. The Guardian. Newly Identified Langya Virus Tracked after China Reports Dozens of Cases; 2022. Available from: <https://www.theguardian.com/science/2022/aug/10/newly-identified-langya-virus-tracked-after-china-reports-dozens-of-cases> [Last accessed on 2022 Aug13].
6. Yuan H, Shi Y, Chen X, Zhai J, Zhang J, Yuan ZG. Humans are urged to be vigilant against spillback infection of new henipaviruses. *Front Immunol* 2022;13:1035456.
7. Sah R, Shah J, Rao P, Padhi BK, Mohanty A, Yatoo MI, *et al.* 'Langya' virus, a zoonotic henipavirus recently

- emerged in China, public health concerns, and counteracting prevention and control measures-an update. *Preprints* 2023;1:1-10.
8. Mallapaty S. New 'Langya'virus identified in China: What scientists know so far. *Nature* 2022;608:656-7.
 9. Tabassum S, Naeem A, Rehan ST, Nashwan AJ. Langya virus outbreak in China, 2022: Are we on the verge of a new pandemic? *J Virus Erad* 2022;8:100087.
 10. US AC The Conversation. What Is the New Langya Virus, and Should We Be Worried. *Scientific American*. Available from: <https://www.scientificamerican.com/article/what-is-the-new-langya-virus-and-should-we-be-worried> [Last accessed on 2023 Feb 07].
 11. PHO. Ontario Agency for Health Protection and Promotion. (Public Health Ontario). Risk Assessment for Langya Henipavirus (LayV) in Ontario; 2022. Available from: https://www.publichealthontario.ca/-/media/documents/L/2022/langya-henipavirus-risk-assessment-ontario.pdf?sc_lang=en [Last accessed on 2022 Aug 24].
 12. Langya Henipavirus: All You Need to Know about New Zoonotic Virus that's Infected 35 People. *Business Today*; 2022. <https://www.businesstoday.in/latest/economy/story/langya-henipavirus-all-you-need-to-know-about-new-zoonotic-virus-thats-infected-35-people-344274-2022-08-10> [Last accessed on 2023 Feb 07].
 13. Tabish SA, Nabil S. An age of emerging and reemerging pandemic threats. *Health* 2022;14:1021-37.
 14. Amin R, Darwin R, Chopra H, Emran TB. Langya virus: Slope of the iceberg for unexplored pathogens. *Int J Surg* 2023;109:163-4.
 15. Lu D. Newly Identified Langya Virus Tracked after China Reports Dozens of Cases. *The Guardian*; 2022. Available from: <https://www.theguardian.com/science/2022/aug/10/newly-identified-langya-virus-tracked-after-china-reports-dozens-of-cases> [Last accessed on 2023 Feb 07].
 16. Thakur CK, Adhikari JB, Gupta N, Ghimire P, Dhimal M. Is the emergence of the zoonotic Langya virus amidst COVID-19 and monkeypox a cause for concern? *Future Virol* 2023;18:5-7.
 17. Sah R, Mohanty A, Chakraborty S, Dhama K. Langya virus: A newly identified zoonotic henipavirus. *J Med Virol* 2022;94:5621-2.
 18. China Reports Cases of Langya Virus. What is this New Zoonotic Disease that has Infected Over 30 People? *Financial Express*. Available from: <https://www.financialexpress.com/healthcare/news/healthcare/china-reports-cases-of-langya-virus-what-is-this-new-zoonotic-disease-that-has-infected-over-30-people/2624570> [Last accessed on 2023 Feb 08].
 19. Benisek A. What Is Langya Henipavirus?; 2022 Available from: <https://www.webmd.com/lung/langya-henipavirus>. [Last accessed on 2022 Aug 14].
 20. Chakraborty S, Chandran D, Mohapatra RK, Islam MA, Alagawany M, Bhattacharya M, *et al.* Langya virus, a newly identified henipavirus in China-zoonotic pathogen causing febrile illness in humans, and its health concerns: Current knowledge and counteracting strategies-correspondence. *Int J Surg* 2022;105:106882.
 21. Chen R, Quigley A. The Emergence of Novel Langya Henipavirus in China. *Global Biosecur* 2022;4.
 22. Quarleri J, Galvan V, Delpino MV. Henipaviruses: An expanding global public health concern? *Geroscience* 2022;44:2447-59.