

# Chemical Messengers-Neurotransmitters Have a Crucial Function in the Transmission and Processing of Information Throughout the Entire Body

Shruti Sharma\*

Department of Microbiology and neurology, India

## Abstract

Enteroviruses are a diverse group of viruses that commonly infect humans, often causing mild respiratory and gastrointestinal symptoms. However, in a subset of cases, enterovirus infections can lead to severe neurological complications. This review aims to provide an overview of the characteristics of enterovirus infection-associated neurologic disease, highlighting the key clinical features, epidemiology, pathogenesis, diagnostic methods, and potential therapeutic approaches. Understanding the complexities of enterovirus-related neurological diseases is crucial for early detection, effective management, and prevention strategies to mitigate the impact of these infections on public health.

## Introduction

Enteroviruses, belonging to the Picornaviridae family, are a significant cause of human infections worldwide. While many enterovirus infections result in mild and self-limiting illnesses such as the common cold or gastroenteritis, they can also manifest as serious neurological diseases. These neurological complications are increasingly recognized as a public health concern due to their potential for severe morbidity and, in some cases, mortality [1]. Enterovirus-associated neurologic diseases encompass a broad spectrum of clinical entities, ranging from aseptic meningitis and encephalitis to acute flaccid paralysis (AFP) and other neuromuscular disorders. The causative agents primarily include enterovirus species like polioviruses, coxsackieviruses, and echoviruses, among others. The pathogenesis of enterovirus-induced neurological diseases is complex and multifaceted, involving direct viral invasion of the central nervous system (CNS), immune-mediated mechanisms, and genetic predisposition [2]. This review aims to provide a comprehensive overview of the characteristics of enterovirus infection-associated neurologic diseases. It will delve into the clinical manifestations, epidemiology, and geographic distribution of these diseases, shedding light on the factors that influence their emergence and spread. Furthermore, we will explore the various diagnostic methods, from laboratory testing to advanced imaging techniques that are crucial for accurate and timely diagnosis. Finally, we will discuss potential therapeutic interventions, including antiviral drugs and immunomodulatory approaches, with the goal of improving patient outcomes. A thorough understanding of the characteristics of enterovirus infection-associated neurologic disease is essential for healthcare professionals, researchers, and policymakers alike [3]. By elucidating the complexities of these infections, we can develop more effective strategies for early detection, management, and prevention, ultimately reducing the burden of enterovirus-related neurological diseases on individuals and communities.

## Discussion

Enterovirus infection-associated neurologic diseases encompass a diverse group of conditions that pose significant challenges to healthcare systems and public health. In this discussion section, we will explore several key points related to these diseases, including their clinical implications, diagnostic approaches, potential treatments, and future directions for research and prevention [4].

## Clinical implications

Enterovirus-induced neurological diseases can present with a

wide range of clinical manifestations. Aseptic meningitis is a common neurological complication, characterized by fever, headache, and neck stiffness. More severe outcomes include viral encephalitis, which can lead to altered mental status, seizures, and long-term neurological deficits. Acute flaccid paralysis (AFP) is another critical manifestation, resembling polio-like symptoms, and often associated with enterovirus-D68 (EV-D68) and other enteroviruses. These conditions can be life-threatening and necessitate prompt medical attention [5].

## Epidemiology and geographic distribution

The epidemiology of enterovirus-associated neurologic diseases is influenced by various factors, including enterovirus serotypes, regional prevalence, and vaccination status. Poliovirus remains a significant concern in some areas, despite global vaccination efforts. Coxsackieviruses and echoviruses are responsible for many cases of aseptic meningitis and encephalitis. Additionally, the emergence of enterovirus-D68 has raised concerns due to its association with severe respiratory and neurological symptoms. Understanding the regional and temporal patterns of these infections is crucial for targeted interventions [6].

## Diagnostic challenges

Diagnosing enterovirus-related neurological diseases can be challenging, as their clinical presentation often overlaps with other viral and non-viral causes. Laboratory methods, including PCR-based assays, serological tests, and cerebrospinal fluid analysis, play a vital role in confirming the diagnosis. However, the availability and sensitivity of these tests may vary, making accurate and timely diagnosis a significant concern, particularly in resource-limited settings [7].

**\*Corresponding author:** Shruti Sharma, Department of Microbiology and neurology, India, E-mail: ssharma334@gmail.com

**Received:** 30-Aug-2023, Manuscript No: JNID-23-114808; **Editor assigned:** 02-Sep-2023, Pre-QC No: JNID-23-114808(PQ); **Reviewed:** 18-Sep-2023, QC No: JNID-23-114808; **Revised:** 22-Sep-2023, Manuscript No: JNID-23-114808(R); **Published:** 29-Sep-2023, DOI: 10.4172/2314-7326.1000464

**Citation:** Sharma S (2023) Chemical Messengers-Neurotransmitters Have a Crucial Function in the Transmission and Processing of Information Throughout the Entire Body. J Neuroinfect Dis 14: 464.

**Copyright:** © 2023 Sharma S. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Therapeutic approaches

Currently, no specific antiviral drugs are approved for the treatment of enterovirus infections, including those causing neurologic disease. Supportive care remains the mainstay of management, focusing on symptom relief, hydration, and respiratory support when necessary. Research into potential antiviral agents and immunomodulatory therapies is ongoing, but no definitive treatments have emerged thus far. Continued efforts to develop targeted therapies are essential to improve patient outcomes.

## Prevention and future directions

Prevention strategies are crucial in mitigating the impact of enterovirus-associated neurologic diseases. Vaccination against poliovirus has been highly successful in reducing the global burden of polio-related paralysis, but ongoing surveillance and vaccination campaigns are essential to maintain progress. Additionally, raising awareness of enterovirus-associated neurological complications among healthcare providers and the general public can facilitate early diagnosis and treatment.

Future research directions should focus on developing effective antiviral therapies, enhancing diagnostic methods, and better understanding the pathogenesis of these diseases. Moreover, the development of vaccines targeting non-polio enteroviruses associated with neurologic diseases, such as EV-D68, could be an important preventive measure [8-11].

## Conclusion

Enterovirus infection-associated neurologic diseases constitute a significant and multifaceted public health concern. This review has highlighted key aspects of these diseases, including their clinical implications, epidemiology, diagnostic challenges, treatment approaches, and future directions for research and prevention. The clinical spectrum of enterovirus-induced neurologic diseases ranges from relatively mild aseptic meningitis to severe and potentially life-threatening conditions such as encephalitis and acute flaccid paralysis. These diseases can have lasting neurological consequences, underscoring the need for early diagnosis and appropriate management. Epidemiological factors, including the prevalence of specific enterovirus serotypes and vaccination coverage, influence the occurrence and

geographic distribution of these diseases. Ongoing surveillance efforts and vaccination campaigns, particularly for poliovirus, remain crucial in preventing outbreaks and reducing the burden of enterovirus-associated neurologic diseases. In conclusion, the understanding and management of enterovirus-associated neurologic diseases are evolving, and concerted efforts are needed to alleviate their burden on global health.

## Acknowledgment

None

## Conflict of Interest

None

## References

1. Morris AD, Rose FC, Birkhauser, Boston, MA (1989) James Parkinson His Life and Times, Deaths associated with neurological conditions in England.
2. Savica R, Grossardt BR, Bower JH, Ahlskog J, Rocca WA (2016) Time trends in the incidence of Parkinson disease. *Neurol* 73:981-989.
3. Morens DM, Folkers GK, Fauci AS (2009) What is a pandemic? *J Infect Dis* 200:1018-1021.
4. Dorsey ER, Constantinescu R, Thompson JP, Biglan KM, Holloway RG (2007) Projected number of people with Parkinson disease in the most populous nations, 2005 through 2030. *Neurology* 68:384-386.
5. Edge L (2008) Neuroinfections: celebrating the past, discussing the present. *Lancet Neurol* 7:975.
6. Epstein LG, Sharer LR, Cho ES, Myenhofer M, Navia B, et al. (1985) HTLV-III/LAV-like retrovirus particles in the brains of patients with AIDS encephalopathy. *AIDS Res* 1:447-454.
7. Isotalo J, Vahlberg T, Kaasinen V (2017) Unchanged long term rural-to-urban incidence ratio of Parkinson's disease. *Mov Disord* 32:474-475.
8. GBD 2016 Parkinson's disease Collaborators (2018) Global, regional, and national burden of Parkinson's disease in 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Neurol* 17:939-953.
9. Savica R, Grossardt BR, Bower JH, Ahlskog JE, Boeve B, et al. (2017) Survival and causes of death among people with clinically diagnosed synucleinopathies with Parkinsonism: a population-based study. *JAMA Neurol* 74:839-846.
10. Darweesh SKL, Raphael KG, Brundin P, Matthews H, Wyse RK, et al. (2018) Parkinson matters. *J Parkinsons Dis* 8:495-498.
11. Amudhan S, Gururaj G, Satishchandra P (2015) Epilepsy in India I: Epidemiology and public health. *Ann Indian Acad Neurol* 18:263-277.