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Rare But Dangerous Complications of Coxsackie Virus Infection

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Abstract: Coxsackie viruses belong to the Enterovirus genus and are commonly associated with mild, self-limiting infections. However, in certain cases particularly among neonates, young children, and immunocompromised individuals these infections may result in rare but potentially life-threatening complications. This article reviews the clinical characteristics of Coxsackie virus types A and B, transmission pathways, and severe complications including myocarditis, meningitis, encephalitis, pancreatitis, hepatitis, and serious neonatal infections. The aim of the study is to highlight the clinical significance of these complications and emphasize the importance of early diagnosis and careful monitoring in high-risk populations.

Keywords: Coxsackie virus, enterovirus infection, myocarditis, meningitis, encephalitis, pancreatitis, neonatal infection.

Introduction. Coxsackie viruses are members of the *Enterovirus* genus within the *Picornaviridae* family and represent a significant cause of viral infections worldwide. Clinical manifestations range from mild febrile illness to severe neurological and cardiac involvement. The virus was first identified in Coxsackie, New York, by Gilbert Dalldorf in the mid-20th century during investigations of poliomyelitis-like illnesses.

Transmission occurs primarily via the fecal–oral route, but respiratory droplets and contaminated surfaces also play an important role. Poor hygiene conditions, overcrowding, and close contact facilitate viral spread. Although infection is often mild, serious complications may occur, especially in neonates, young children, and individuals with weakened immune systems.

Materials and Methods. This review was conducted using peer-reviewed articles indexed in PubMed, Scopus, and Web of Science databases. Keywords included *Coxsackie virus*, *enterovirus complications*, *viral myocarditis*, *aseptic meningitis*, and *neonatal enterovirus infection*. Relevant publications from the last 15 years were analyzed to identify rare but clinically significant complications.

Results. Coxsackie virus infections are classified into two major groups: **Coxsackie A** and **Coxsackie B**, each associated with distinct clinical manifestations. Coxsackie A viruses commonly cause hand-foot-and-mouth disease, herpangina, stomatitis, conjunctivitis, skin rashes, and occasionally aseptic meningitis.

Coxsackie B viruses more frequently affect internal organs, including the heart, liver, pleura, and pancreas, and may lead to prolonged fever, chest pain, abdominal pain, and systemic symptoms.

While most infections resolve spontaneously, rare but severe complications have been documented.

Figure 1. Clinical manifestations of Coxsackie virus infection.

Discussion

Myocarditis. Coxsackie B viruses are among the leading viral causes of myocarditis. Viral invasion of myocardial tissue induces inflammation, impairing cardiac contractility and potentially leading to heart failure, arrhythmias, or sudden death.

Meningitis. Both Coxsackie A and B viruses can cause aseptic meningitis. Clinical features include fever, headache, neck stiffness, photophobia, and vomiting. Although recovery is usually complete, neurological sequelae may occur.

Encephalitis. A rare but life-threatening complication characterized by inflammation of brain parenchyma. Symptoms include altered consciousness, seizures, behavioral changes, and focal neurological deficits.

Pancreatitis and Diabetes Risk. Coxsackie B virus infection has been associated with pancreatic inflammation. Some studies suggest a possible role of Coxsackie B4 virus in triggering type 1 diabetes mellitus through immune-mediated destruction of pancreatic beta cells.

Hepatitis. Hepatic involvement may occur, particularly in severe or systemic infections, leading to elevated liver enzymes and, rarely, liver failure.

Severe Neonatal Infection. Neonates infected during the first weeks of life may develop fulminant systemic disease, including hepatic failure, coagulopathy, myocarditis, and high mortality. Maternal infection during pregnancy increases fetal risk.

Conclusion. Although Coxsackie virus infections are often mild, clinicians should be aware of their potential to cause rare but severe complications. Myocarditis, central nervous system involvement, pancreatitis, hepatitis, and neonatal systemic infections represent the most dangerous outcomes. Early diagnosis, recognition of alarm symptoms, and careful monitoring are essential, particularly for infants, young children, and immunocompromised patients.

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