



A REVIEW ARTICLE ON COMPLICATION OF COVID 19 BOOSTER

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ABSTRACT

Coronavirus disease 2019 (COVID-19) vaccines played a major role in reducing severe illness, hospitalization, and mortality worldwide. Booster doses were introduced to maintain immunity against emerging variants and waning antibody responses. Although booster vaccination has shown significant public health benefits, post-vaccination complications and adverse events have been increasingly reported. Most adverse effects are mild and self-limiting, including fever, fatigue, headache, and injection-site pain. However, rare but serious complications such as myocarditis, thrombosis, Guillain-Barré syndrome, autoimmune reactions, and neurological manifestations have also been documented. This review summarizes the currently available evidence regarding complications associated with COVID-19 booster vaccination, mechanisms involved, clinical manifestations, diagnosis, management, and preventive strategies. The review also discusses vaccine safety surveillance systems and the balance between vaccine benefits and risks.

KEYWORDS: COVID-19 booster vaccine, adverse events, complications, myocarditis, thrombosis, neurological complications, vaccine safety, SARS-CoV-2 vaccination.

INTRODUCTION

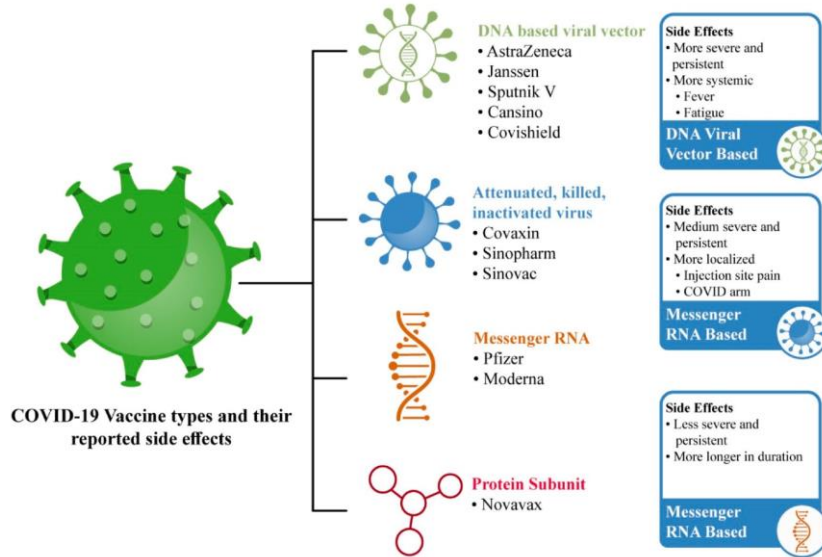
The emergence of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) led to an unprecedented global health crisis. Vaccination became the primary strategy for controlling the spread of COVID-19 and reducing disease severity. Several vaccines, including mRNA vaccines, viral vector vaccines, protein subunit vaccines, and inactivated vaccines, received emergency authorization worldwide.

Over time, waning immunity and the emergence of viral variants prompted the administration of booster doses. Booster vaccination significantly enhanced antibody responses and reduced hospitalization and mortality. However, with large-scale vaccination campaigns, various adverse events following immunization (AEFI) were reported. Most complications were mild and transient, while a small proportion involved severe systemic reactions requiring medical attention. ❖

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The safety profile of COVID-19 booster vaccines continues to be extensively monitored through pharmacovigilance systems and clinical studies. Understanding these complications is important for healthcare professionals, policymakers, and the public to ensure evidence-based vaccine practices.

Common Adverse Effects of COVID-19 Booster Vaccines



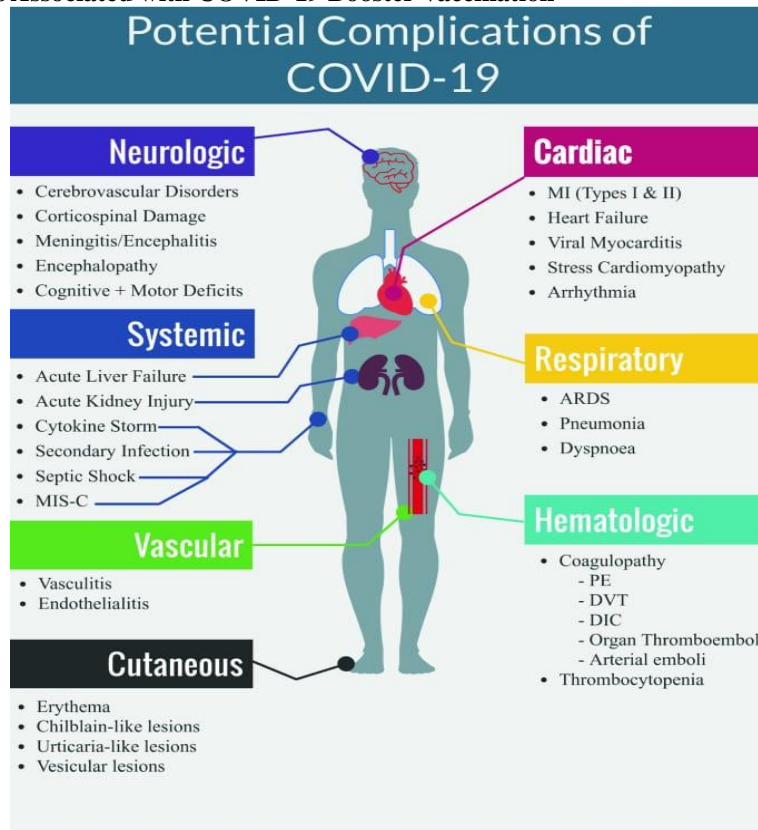
Most individuals experience mild and temporary symptoms within 24–72 hours after vaccination.

Local Reactions
 Injection-site pain
 Swelling
 Redness
 Tenderness

Systemic Reactions

Fever
 Chills
 Fatigue
 Headache
 Myalgia
 Nausea
 Arthralgia

Serious Complications Associated with COVID-19 Booster Vaccination



ARDS = Acute Respiratory Distress Syndrome DVT = Deep Vein Thrombosis, DIC = Disseminated Intravascular Coagulopathy, MI = Myocardial Infarction, PE = Pulmonary Embolism, MIS-C = Multi-inflammatory Syndrome in Children

1. Myocarditis and Pericarditis

Myocarditis is one of the most recognized rare complications associated mainly with mRNA booster vaccines, especially among young males.

Clinical Features

Chest pain

Palpitations

Shortness of breath

Elevated cardiac enzymes

2. Autoimmune Reactions

COVID-19 booster vaccination may rarely trigger autoimmune responses in predisposed individuals.

Reported Conditions

Autoimmune hepatitis

Lupus flare

Rheumatoid arthritis exacerbation

Vasculitis

Proposed Mechanism

Molecular mimicry

3. Dermatological Complications

Several skin reactions have been documented.

Manifestations

Urticaria

Morbilloform rash

Eczema flare

Alopecia areata

Guillain–Barré Syndrome (GBS)

Prevention and Management Strategies

Pre-Vaccination Assessment

Evaluate allergy history

Assess comorbid conditions

Identify prior vaccine reactions

Post-Vaccination Monitoring

Observe for immediate allergic reactions

Educate patients about warning symptoms

Early Intervention

Prompt recognition and treatment improve outcomes for severe adverse reactions.

Future Perspectives

Further long-term studies are needed to:

Understand mechanisms of rare complications

Improve vaccine formulations

Develop personalized vaccination strategies

Enhance global vaccine safety surveillance

CONCLUSION

COVID-19 booster vaccines remain an essential public health intervention against SARS-CoV-2 infection. Although mild adverse effects are common, serious complications such as myocarditis, thrombosis, neurological disorders, and autoimmune reactions are rare. Current evidence indicates that the benefits of booster vaccination outweigh the risks in most populations. Continuous pharmacovigilance, patient education, and ongoing research are necessary to optimize vaccine safety and public confidence.

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