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The Association Between Viral Infections and the Risk of Cardiovascular Diseases

Numeroase dovezi emergente suggest that acute and chronic viral infections can have a significant impact on cardiovascular health. A recent meta-analysis, comprising 155 observational studies, identified a significant association between common viral infections—such as influenza, COVID-19, hepatitis C, and herpes zoster (shingles)—and an increased risk of major cardiovascular events, including myocardial infarction (heart attack) and stroke. According to the authors, certain persistent viruses, such as HIV, can maintain increased cardiovascular risks over the long term.

The analysis was led by a group of researchers from the University of California, Los Angeles (UCLA) and consisted of a systematic review of literature published between 1997 and 2024. The included studies originate mainly from North America, Europe, and East Asia, and investigated the relationship between various viral infections and the incidence of myocardial infarction or stroke. The results were published in the Journal of the American Heart Association (AHA).

According to the study, influenza was associated with a four times higher risk of myocardial infarction (IRR = 4.01) and five times higher risk of stroke (IRR = 5.01) in the first month after infection.

Additionally:

- Hepatitis C was associated with an increased risk of coronary heart disease (RR = 1.27) and stroke (RR = 1.23);
- HIV showed a consistent association with an increased risk of coronary heart disease (RR = 1.60) and stroke (RR = 1.45);
- SARS-CoV-2 was linked to a higher probability of coronary heart disease (RR = 1.74) and stroke (RR = 1.69);
- Herpes zoster was associated with a moderate, but significant, increase in the risk of coronary heart disease (RR = 1.12) and stroke (RR = 1.18).

Evidence regarding cytomegalovirus, known for its teratogenic effects, was considered insufficient to confirm a causal relationship with cardiovascular diseases.

The authors suggest that the main pathophysiological mechanism involves the activation of the immune system and the release of pro-inflammatory mediators, which promotes thrombosis formation and damage to the vascular endothelium. These processes can persist even after the clinical resolution of the infection, explaining the prolonged risk of cardiovascular events.

Although the risks associated with HIV, hepatitis C, and herpes zoster are lower compared to post-influenza or post-COVID-19 risks, they remain clinically relevant due to the persistence of these viruses in the body. In the case of herpes zoster, which affects approximately one-third of the population over their lifetime, the cumulative impact at the population level becomes considerable.

The results of this meta-analysis underscore the importance of an integrated preventive approach in public health, especially in adults with traditional cardiovascular risk factors. Vaccination against influenza, COVID-19, and herpes zoster could play an essential role in reducing the risk of myocardial infarction and stroke.

Researchers recommend extending investigations to other viruses with cardiovascular pathogenic potential, such as cytomegalovirus, herpes simplex type 1, hepatitis A, respiratory syncytial virus (RSV), chikungunya, dengue, and human papillomavirus, to clarify the mechanisms and clinical implications of these associations.

Translated and adapted from Mary Van Beusekom, MS, November 5, 2025