

Researchers sound alarm over Zika's potentially harmful heart effects

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As the Zika virus continues to spread globally, new evidence has emerged about the virus's potentially detrimental effects on the heart, according to data scheduled for presentation at the American College of Cardiology's 66th Annual Scientific Session.

The study—the first to report Zika-related heart troubles following infection—included adult patients with no prior history of cardiovascular disease who were treated at the Institute of Tropical Medicine in Caracas, Venezuela, one of the epicenters of the Zika virus outbreak. All but one patient developed a dangerous heart rhythm problem and two-thirds had evidence of heart failure, a condition in which the heart can't pump enough blood to meet the body's needs.

"Our report provides clear evidence that there is a relationship between the Zika virus infection and [cardiovascular complications](#)," said Karina Gonzalez Carta, MD, cardiologist and research fellow at the department of cardiovascular diseases at Mayo Clinic and the study's lead author.

"Based on these initial results, people need to be aware that if they travel to or live in a place with known Zika virus and develop a rash, fever or conjunctivitis, and within a short timeframe also feel other symptoms such as fatigue, shortness of breath or their heart skipping beats, they should see their doctor."

Carta and her team were not entirely surprised by their findings as they follow trends seen with other mosquito-borne diseases known to affect the heart, including the dengue and Chikungunya viruses. However, she

noted that the burden and severity of heart problems, including rapidly progressive heart failure and potentially life-threatening arrhythmias, among these patients was unexpected.

Nine patients who were seen in the clinic in Caracas within one week of having Zika-type symptoms and who subsequently reported common symptoms of heart problems, most commonly palpitations followed by shortness of breath and fatigue, were included in this small, prospective case report. Only one patient had any previous cardiovascular problems (well-controlled high blood pressure), and lab tests confirmed that all had active Zika infection. Patients were asked to fill out a form to record their symptoms and underwent an initial electrocardiogram, a test that displays the electrical activity of the heart, which in eight cases was suggestive of a problem with the rate or rhythm of their heartbeat. These findings prompted researchers to perform a full cardiovascular work up using an echocardiogram, (24-hour) Holter monitor and a cardiac magnetic resonance imaging study. Of the nine patients, six were female with a mean age of 47 ± 17 years. They were followed for an average of six months, beginning in July 2016.

Dangerous arrhythmias were detected in eight of the nine patients: three cases of atrial fibrillation, two cases of non-sustained atrial tachycardia and two cases of ventricular arrhythmias, which can be deadly. Heart failure was present in six cases. Of these, five patients had heart failure with low ejection fraction—when the amount of blood the heart is able to squeeze out is much less than what it normally would be—and one had heart failure with preserved ejection fraction along with pre-eclampsia and a moderate to severe amount of fluid around the heart (called pericardial effusion). So far, none of the patients' cardiac issues have resolved, though symptoms are much improved due to guideline-directed treatment for [heart failure](#) or atrial fibrillation. Of note, cardiovascular symptoms tend to manifest later in the process. Data show an average lag of 10 days from patients' initial complaints of Zika symptoms to reports

of symptoms suggestive of heart problems.

"Since the majority of people with Zika virus infections present with mild or non-specific symptoms and symptoms of cardiovascular complications may not occur right away, we need to raise awareness about the possible association," Carta said.

Although cardiovascular manifestations are fairly rare against the total number of patients treated at the clinic, Carta believes many more cases will be diagnosed, not only in patients with clear symptoms, but also among those with less severe or no signs of myocarditis, an inflammation of the myocardium, the middle layer of the heart wall. Myocarditis can affect the heart's muscle and electrical system.

"It's likely that many more people are affected, especially as many clinicians and people may not make the connection between symptoms," Carta said. "We need larger, systematic studies to understand the actual risk of Zika-related cardiac problems and what makes one patient more prone to develop them."

For now, she advises that people who are traveling to areas with known Zika virus consider talking with their doctor so they know what basic measures can be taken to prevent infection. Researchers are continuing to follow these patients and are setting up new strategies to screen more patients for cardiovascular problems.

Symptoms of the Zika virus usually include mild fever, skin rash, conjunctivitis (pink eye), muscle and joint pain, malaise or headache, which typically last for two to seven days, according to the World Health Organization. The best way to prevent the Zika virus is by preventing mosquito bites.

While this study points to another potential risk of Zika virus infection,

it is limited due to its small size. What remains unclear is whether and how the Zika virus might affect people with existing heart disease. However, Carta says that based on our knowledge of other arboviral infections, patients who have pre-existing [cardiovascular disease](#) tend to have worse outcomes.

Carta will present the study, "Myocarditis, Heart Failure and Arrhythmias in Patients With Zika," on Saturday, March 18, 2017, at 1:30 p.m. ET at Poster Hall C at the American College of Cardiology's 66th Annual Scientific Session in Washington. The meeting runs March 17-19.

Provided by American College of Cardiology

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