Research sheds light on a leading cause of heart attacks related to pregnancy

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A new study of a leading cause of heart attacks in pregnant and

postpartum women offers insights on when the problem strikes, how it has been treated and how survivors might weigh the risks of becoming pregnant again.

The condition—pregnancy-associated spontaneous coronary artery dissection, or P-SCAD—was until recently considered too rare to study. Using European SCAD registry data from 1984 to 2021, the new research included 82 women with P-SCAD and 28 women who became pregnant after SCAD. Researchers also evaluated 13 fatal P-SCAD cases from a U.K. review of maternal deaths.

Those are small numbers, said the study's senior author, Dr. David Adlam, but important in the world of P-SCAD.

SCAD doesn't cause the typical heart attack, where a clot blocks blood from reaching the heart muscle, said Adlam, a cardiologist and associate professor at the University of Leicester in Great Britain. Rather, there's a separation between the layers of the artery wall, caused by what Adlam describes as a bleed or a bruise. As that bruise expands, it squeezes off flow through the artery.

SCAD primarily affects women 50 and younger, according to a 2018 American Heart Association scientific statement, and can strike people with few obvious risk factors. It's unclear exactly how common SCAD is, but it may cause 1% to 4% of cases of acute coronary syndrome, an umbrella term for heart attacks and other conditions where blood flow to the heart is blocked.

P-SCAD cases make up a fraction of that. But although heart attacks during or soon after pregnancy are rare, P-SCAD is a common cause and tends to be more severe than SCAD outside pregnancy.

Adlam said the new findings, which appear Friday in the AHA journal

Circulation, shed light on several areas.

One is P-SCAD's timing. Although it's often thought of as a threat during pregnancy, the most dangerous period in the study was in the month after delivery. In the study, only five of the 82 P-SCAD cases occurred during pregnancy. Among the 13 fatal cases, 10 happened after pregnancy.

The study did not look at P-SCAD's causes, but the data suggests the physical strains of labor and delivery are not to blame, Adlam said. "It's very likely to be related to those changes in how the vascular wall is made up as a consequence of those very precipitous changes in female sex hormones that occur after delivery."

The researchers also examined pregnancy-associated risks for survivors. Among the 28 women who became pregnant after SCAD, there were a total of 37 pregnancies. In three of those pregnancies, a heart attack occurred that was caused by or likely caused by another SCAD. But none of the women or babies died.

The findings suggest non-aggressive treatment may be best where possible.

For most heart attacks, standard practice is to insert a catheter, reopen the blocked artery and "pop a stent in," Adlam said. But women with SCAD, and particularly P-SCAD, have fragile arteries. The catheter might cause another dissection or worsen the dissection.

More than half of women in the study were successfully treated conservatively, without procedures to open arteries.

Dr. Sharonne Hayes, a cardiologist at the Mayo Clinic in Rochester, Minnesota, who was not involved in the study, said the findings confirm

earlier work that led to conservative treatment becoming the norm.

Hayes, who led the writing group for the AHA's SCAD statement, said the new study also affirmed "a fairly similar and not insubstantial risk" for women who became pregnant after SCAD. "But it also affirmed that the vast majority of the individuals did well."

Hayes said SCAD survivors for many years were told not to get pregnant. But the new findings match what has been seen in other studies of SCAD survivors who become pregnant, including one in *JAMA Network Open* in 2020. Hayes was the senior author of that study, involving 23 women who became pregnant after SCAD; two had a repeat SCAD.

It's all good information for women and their doctors, Hayes said, as they decide what's right for them.

In the long term, ongoing genetics research promises a better understanding of what causes SCAD and who is at risk, experts said.

Meanwhile, Adlam said, health care workers of all disciplines need to be more aware of P-SCAD, which he suspects is underdiagnosed for a host of reasons. Pregnant and postpartum women endure so many changes to their bodies that chest pain might be overlooked.

He suspects the number of cases his and other studies have found might be just the tip of the iceberg. "It's not a big iceberg," Adlam said, but "I'm sure that it's bigger than what we're seeing."

In the meantime, he said, "it's really nice that we're now able to take pregnancy-associated SCAD out of the realm of occasional case reports or small series of a couple of patients." Having dozens of cases may not be a lot, but "we're starting to get towards numbers of cases where we

can draw some inferences and start to give some clearer advice."

More information: Nathan Chan et al, Pregnancy and Spontaneous Coronary Artery Dissection: Lessons From Survivors and Nonsurvivors, *Circulation* (2022). DOI: 10.1161/CIRCULATIONAHA.122.059635