Using genes to guide medication regimens after getting a heart stent improves outcomes

November 4 2021, by Anna Jones

Vibhu Parcha, M.D., and Pankaj Arora, M.D. Credit: University of Alabama at Birmingham

A recent study published in *Circulation: Genomic and Precision Medicine* found that using genetic information to prescribe medications following

a stent's being placed after a heart attack reduces the risk of fatal outcomes in the future. The findings from the University of Alabama at Birmingham support the growing trend of using a patient's genetic information to guide common prescription medications for safe and effective treatment.

Patients with coronary artery disease who receive a stent to open blocked arteries in the heart often receive medications to prevent the occurrence of a deadly cardiovascular event such as heart attack, stroke or death. However, Vibhu Parcha, M.D., a clinical research fellow in the UAB Heersink School of Medicine Division of Cardiovascular Disease, says that, depending on an individual's genetics, these medications could become less effective.

"Some of us carry a natural variation in our DNA that impairs our ability to metabolize clot-preventing medication," said Parcha, first author of the study. "This can sometimes cause these lifesaving medicines to become less effective. Therefore, an approach of using genetic information to prescribe proper medications after placing a stent has been proposed and recently assessed in an international, multicenter randomized clinical trial."

For this study, the researchers used the data from the TAILOR-PCI trial, which was supported by the National Heart, Lung, and Blood Institute. The trial was conducted in over 5,300 patients to determine whether using the genetic information when prescribing clot-preventing medications reduces the risk of developing any major cardiovascular event compared with the routine approach. The researchers combined the evidence from this study with information from previously conducted investigations.

"Based on the evidence from all randomized clinical trials to date combined with the latest evidence from TAILOR-PCI trial, we found

that using the genetic information to guide clot-preventing antiplatelet medications further reduces the risk of developing potentially fatal future cardiovascular events," Parcha said.

Through their research, authors of this study found that patients who were treated with a genotype-based approach had a 99 percent lower chance of having a future stroke, heart attack, a blockage of stents and bleeding episodes compared to those who were treated with a routine clinical approach.

"Clopidogrel is a generic affordable medication that is widely prescribed, especially in the southeast United States, among patients getting a heart stent," said senior author Pankaj Arora, M.D., a physician-scientist in UAB's Division of Cardiovascular Disease. "We can now modify our treatment approach right after getting a heart stent or even later based on the genetic information to ensure that the risk of someone's developing a potentially fatal cardiac event is very small."

Arora adds that the current study provides evidence supporting the use of easy and quick genetic testing when someone is getting a stent. This course of treatment will ensure that patients get a precise and tailored medication regimen to prevent any future cardiac events.

"Currently, we are seeing a surge of genomics integrated into routine clinical therapy," Arora said. "This is a prime example of using precision medicine principles for a tailored evidence-based medication regimen for every patient."

More information: Vibhu Parcha et al, Genotype-Guided P2Y 12 Inhibitor Therapy After Percutaneous Coronary Intervention: A Bayesian Analysis, *Circulation: Genomic and Precision Medicine* (2021). DOI: 10.1161/CIRCGEN.121.003353