Withholding angiotensin receptor blockers after surgery increases risk of postoperative death

June 4 2015

Withholding angiotensin receptor blockers (ARBs) for longer than two days after surgery is associated with a significantly increased risk of postoperative death, according to a study of more than 30,000 patients in the VA health care system by researchers at UC San Francisco and the San Francisco VA Medical Center (SFVAMC).

ARBs are prescribed for high blood pressure, heart disease and kidney disease, explained lead author Susan M. Lee, MD, an SFVAMC anesthesiologist and UCSF clinical instructor.

"For non-cardiac surgery, ARBs are commonly stopped on the day of surgery because that makes it much easier to control blood pressure for a patient under general anesthesia," said Lee. "In many patients, they are often not restarted right away because of continued concerns about low blood pressure or kidney function. It turns out that this may be contributing to higher postoperative mortality."

The researchers found that patients who were not put back on ARBs within two days after surgery were up to one and a half times more likely to die within 30 days than patients whose ARBs were resumed.

The study was published today in the Online First edition of *Anesthesiology*, the official medical journal of the American Society of Anesthesiologists.

The authors analyzed the medical records of 30,173 VA patients nationwide who underwent inpatient non-cardiac surgery between 1999 and 2011 and who were regularly prescribed an ARB. Almost 34 percent were not put back on ARBs within two days after surgery. After adjusting for other variables, the researchers found that those patients had one and a half times the risk of dying within 30 days after surgery compared with patients whose ARB prescriptions were resumed within two days.

The researchers did not look at possible reasons for the increased risk, but they did find that the patients whose ARBs were restarted sooner had reduced rates of infections, pneumonia, heart failure and kidney failure.

"Since ARBs are known to reduce inflammation, this tells us that post-operative inflammation is probably contributing to increased mortality in patients who aren't put back on ARBs right away," said Lee.

To their surprise, the authors also found that mortality risk associated with ARB withholding was even higher in patients under 60. "However, we know that younger people have a more pronounced inflammatory response, so this makes sense," she said.

The main finding of the paper, said Lee, is very simple: "It's really important to resume ARBs as early as possible. If we do, we may be able to reduce postoperative mortality."

Lee noted that the optimal time for restarting ARBs still needs to be determined by future research. "We may find that continuing ARBs right through the day of surgery is better than stopping even for one day," she said. "The next logical research step would be to conduct a prospective study, where we deliberately compare a group in which we stop and then resume ARBs and a group in which we don't stop them at all."

Provided by University of California, San Francisco