Study calls for research on the efficacy and safety of vena cava filters

March 22 2013

An evaluation of practice patterns in California hospitals showed a large variation in the use of metal devices called inferior vena cava filters, or VCFs, despite little evidence of their safety and effectiveness.

Led by UC Davis physicians, the study demonstrated that hospital rather than patient characteristics best predict VCF use. Patients in larger, urban and private hospitals with more than 400 beds were most likely to be treated with one of the metal devices, which are placed intravenously to prevent pulmonary embolism, a serious and often deadly condition that occurs when blood clots migrate from the legs to the lungs.

Published in *JAMA Internal Medicine*, a JAMA Network publication, the finding leads the authors to recommend additional research of VCF use to determine if the devices improve outcomes for patients who develop blood clots in large, deep veins—a condition known as venous thromboembolism.

"There is little medical evidence that this device does what it is assumed to do, which is prevent pulmonary embolism and save lives," said lead author Richard White, chief of general medicine and medical director of the anticoagulation service at UC Davis. "The decision seems to be driven instead by hospital culture, likely reflecting the opinions of key physicians."

The recommended treatment for venous thromboembolism is anticoagulant medication that thins the blood, stopping clots from

forming and reducing the likelihood that clot parts will break off and travel. This option, however, may not be available for patients who are actively bleeding, are very ill or need urgent surgery.

First developed in the 1980s, the VCF is a device with metal struts that is inserted into the largest vein that runs from the legs to the heart. The belief is that the device blocks the passage of large clots, or at least breaks them up into small pieces that may not cause as much damage. Use of the device is growing, with a more than three-fold increase between 1996 and 2009 in California.

"If we cannot administer a blood-thinning anticoagulant, it may seem logical to use one of these filter devices," said White. "The problem is that there isn't any solid proof that this option actually benefits patients. There is also distressing evidence that the majority of the devices are left inside patients and never removed. Over months and years, the device can break apart and become harmful."

For their retrospective, observational study, White and his colleagues reviewed data from the California Patient Discharge database, which includes patient diagnoses, procedures, demographics and related hospitalization information. All hospitals that admitted more than 55 non-trauma patients diagnosed with a blood clot in one of their legs or pulmonary embolism between January 2006 and December 2010 were included. The final evaluation involved a total of 263 California hospitals and 130,643 patients. Among these patients, 19,537 received a VCF.

The team found an extraordinarily wide variability—from 0 percent to close to 40 percent—in the percentages of patients with blood clots who received VCFs. This large variation was even apparent in neighboring hospitals in the same communities and within large hospital systems. Small hospitals of less than 100 beds and hospitals located in rural areas

were the least likely to use the device. Characteristics such as socioeconomic factors and insurance coverage did not seem to play major roles in the decision to insert the device.

"We assume that some of this variation is related to the wider availability of specialists at larger, urban hospitals who can insert endovascular devices," said White. "The enthusiasm of individual physician leaders within each hospital could also play a central role in explaining the variation across hospitals."

A few patient conditions—particularly metastatic cancer, bleeding or planned surgery—were associated with more frequent use of VCFs, but these conditions were present in only a small percentage of the patients included in the study data.

"These are all very good reasons for considering alternatives to anticoagulant medications, but there is still very little confirmation that the device works," said White.

Rather than leave the decision up to specialist availability or individual physicians, the research team recommended comparative effectiveness studies of using versus not using a VCF.

"The decision to use any medical device should be based on its known benefits in comparison to other options, which could include careful monitoring," said White. "We have set the stage for a study to compare how well the VCF works in saving patients' lives when anticoagulation therapy is not possible."

Provided by UC Davis

Citation: Study calls for research on the efficacy and safety of vena cava filters (2013, March 22)