MedicalXpress

Low blood pressure during dialysis increases risk of clots

July 29 2011

A sudden drop in blood pressure while undergoing dialysis has long vexed many kidney patients. Side effects associated with this situation over the long term range from stroke to seizure to heart damage to death. Patients also suffer in the short term with gastrointestinal, muscular and neurologic symptoms.

Now one more disturbing side effect can be been added to this list.

A study led by researchers at the Stanford University School of Medicine reports an increased risk of blood clotting at the point where the patient's blood vessels are connected to the dialysis machine known as the point of vascular access. Researchers from the University of Utah also contributed to the study, which is to be published online July 29 in the *Journal of the American Society of Nephrology*.

"Our analysis shows another adverse consequence associated with a fall in blood pressure during dialysis for patients," said Tara Chang, MD, a Stanford nephrologist and lead author of the study. "Vascular access is their lifeline. It's required for dialysis and without dialysis, they'll die."

Dialysis is a life-extending procedure that, for most patients with kidney failure, involves sitting in a chair three or more times a week connected to an artificial kidney machine. Blood is cleansed by exchanging fluid and electrolytes across a membrane during each three- to four-hour session. Patients are attached to the dialysis machine through several means.

This point of vascular access is known as the "Achilles' heel" of patients on dialysis.

One of the most common forms of vascular access is a fistula, which is created surgically from the patient's own blood vessels. The tubes used to take blood to and from the body to the dialysis machine are connected to the body at this access point.

Clotting is one of the primary complications of an access point and can lead to its closure.

"These access points don't last forever," said Chang, a postdoctoral scholar. "Many patients go through multiple access points moving from the right to left arm, or into the legs if necessary after repeated failures in the arms. When a patient runs out of access points, it becomes an emergency situation. Anything you can do to extend the life of the access point is important."

The study was based on results from the Hemodialysis study, known as HEMO — a National Institutes of Health-sponsored randomized clinical trial that collected data from 1,846 patients on hemodialysis from 1995 to 2000. (After exclusions, the data set for this new study included 1,426 patients.)

The researchers found that patients who had the most frequent episodes of low blood pressure during dialysis were two times more likely to have a clotted fistula than patients with the fewest episodes.

About $2 billion a year is spent on vascular access in dialysis patients in the United States. Low blood pressure during dialysis occurs in about 25 percent of dialysis sessions.

"Physicians already try to avoid low blood pressure during dialysis

through various means," Chang said. "This is just one more good reason to continue these efforts.

"There is so much we don't know about blood pressure in people on dialysis," she added. "We need future blood pressure management studies to look at not only mortality and hospitalization, but also consider vascular access survival as another important endpoint to study."

Provided by Stanford University Medical Center