



Complications that can happen during dialysis, and what patients can do

(adapted from Diagnosis, Treatment, and Prevention of Hemodialysis Emergencies Manish Saha and Michael Allon)

By **Michael Allon**, M.D.

There are currently approximately 400,000 patients with ESRD on maintenance hemodialysis in the United States. Each one receives dialysis at least three times per week (156 times per year). Given the large number of medical conditions patients on hemodialysis have, and the complexity of the dialysis treatment, it is remarkable how rarely a life-threatening complication occurs during dialysis. The low rate of dialysis emergencies can be attributed to staff vigilance and product innovation.

Most patients will never have or see a dialysis emergency. While it is rare that a serious event could happen during a dialysis session, we outline some of the serious and less serious emergencies that may occur during hemodialysis treatments. If you experience any of these symptoms or see your neighbors experience them, you should alert your dialysis nurse.

Some of the most serious, possibly life-threatening, emergencies include dialysis disequilibrium syndrome,



venous air embolism, venous needle dislodgement, vascular access hemorrhage, or major allergic reactions to the dialyzer or treatment medications.

Dialysis disequilibrium syndrome (DDS)

DDS is a rare event occurring when patients with severely high blood urea levels undergo their first dialysis session. DDS symptoms may include headache, restlessness, vomiting, confusion, seizures, and coma. It may be prevented by making the first dialysis session shorter or slower.

Venous air embolism (VAE)

VAE results from air being accidentally introduced into the patient's bloodstream during the dialysis session. If the air goes to the heart or lungs, it may cause chest pain, shortness of breath, or passing out. If air goes to the brain, it may cause blurred vision, confusion, seizures, or stroke. Fortunately, symptomatic air embolism is exceedingly rare during dialysis, thanks to numerous safeguards in the modern dialysis machine.

Venous needle dislodgement (VND)

VND is a rare but life-threatening complication of dialysis, in which the needle accidentally slips out of the fistula or graft, causing severe blood loss. The symptoms of severe blood loss include dizziness, confusion, low blood pressure, or passing out. It is important to tape the dialysis needle securely, and keep the dialysis needle clearly visible during the dialysis session.

Allergic or Allergic-like reactions

Patients may rarely develop an allergic reaction to the dialysis kidney or to a medication given during dialysis, such as heparin, iron, or antibiotics. Mild cases may cause itching. Severe cases (very rare) may cause swelling of the lips, shortness of breath, wheezing, or low blood pressure. If a patient develops an allergic reaction during dialysis, it is important to determine what they are allergic to, so that the exposure can be avoided in future dialysis sessions.

Less dangerous complications

More frequently, patients may develop low blood pressure during dialysis, which could cause dizziness, confusion, or passing out. Low blood pressure during dialysis is usually due to removing too much fluid or removing fluid too quickly. It is treated by giving IV fluids quickly. The dialysis prescription may need to be changed (less fluid removal or slower removal) to prevent low blood pressure during dialysis. Sometimes, it is necessary to make changes in the blood pressure medications.

Summary

Thanks to staff vigilance and safety features, serious complications during dialysis are extremely rare. Dialysis staff receive frequent and extensive training in how to prevent these complications, recognize them, and treat them in a timely fashion. ●