

Intradialytic hypertension & hypotension

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Changes in blood pressure during the hemodialysis treatment, intradialytic hypotension and hypertension, are common complications, and these are associated with increased morbidity and mortality in end-stage renal disease patients receiving chronic hemodialysis. Symptomatic intradialytic hypotension complicates 5–30% of all dialysis treatments, and risk factors include older age, longer dialysis vintage, diabetes, lower predialysis blood pressure, female gender and the first dialysis treatment of the week. Intradialytic hypotension sometimes occurs in patients with serious medical conditions such as systemic infection, arrhythmias, cardiac problems or hemorrhage. Therefore, it is important to evaluate the presence of these conditions. On the other hand, the most cases do not have serious medical conditions. Excessive ultrafiltration, a rapid reduction in plasma osmolality, incorrectly low prescribed target weight, autonomic neuropathy and diminished cardiac reserve contribute to the development of intradialytic hypotension. Patients with hypotension usually have lightheadedness, nausea, vomiting and muscle cramps. In some cases, there are no symptoms until the blood pressure falls to dangerous levels. Thus, blood pressure must be monitored throughout the hemodialysis session. Acute hypotensive episode can be managed as follows: The patient should be placed in the Trendelenburg position and intravascular fluid should be administered through the blood line. The optimal replacement fluid is not known. Common fluids include isotonic saline, hypertonic glucose, 5% dextrose or albumin solutions, but most clinicians use isotonic saline as the first-line therapy. Ultrafiltration rate should be reduced or stopped for patients with symptomatic hypotension. Oxygen can be administered, since there is evidence regarding the association between intradialytic blood oxygen saturation and intradialytic hypotension. If hypotension persists despite measures, patients need to be evaluated for evidence of an underlying serious medical condition. Preventive strategies should be performed in chronic hemodialysis patients who have recurrent episodes of intradialytic hypotension. First of all, reassessing the target weight, avoiding food intake during or prior to dialysis, giving antihypertensive agents after dialysis, and limiting interdialytic sodium and fluid intake are needed. Various modalities including blood volume monitoring, ultrasound assessment of the inferior vena cava, extravascular lung water indices and bioimpedance analysis can help determine accurate dry weight. If residual kidney function exists, diuretics are considered to increase urine volume for reducing interdialytic weight gain. Guidelines recommend the use of

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cool-dialysate temperature in patients with frequent episodes of intradialytic hypotension because it has been shown to increase hemodynamic stability. However, dialysate temperature below 35°C should not be used. If the above measures fail to decrease the frequency of episodes and ultrafiltration rate is >13 mL/kg per hour, increasing the time and/or frequency of hemodialysis may be effective in preventing intradialytic hypotension. In addition, a trial of midodrine may be effective. Some patients develop hypertension during the hemodialysis treatment, and this is also associated with adverse outcomes. Although the exact mechanism is unclear, intradialytic hypertension is associated with extracellular volume overload and acute increases in vascular resistance during dialysis. Management strategies include re-evaluation of dry weight, and use of low dialysate sodium and poorly dialyzed anti-hypertensive drugs such as carvedilol.