Management of Hyperkalemia in ESRD

Yasuhiko Iino, M.D.

2nd Department of Internal Medicine, Nippon Medical School, Japan

In Japan, more than 230,000 patients were treated with hemodialysis and CAPD. Dialysis pts are increasing by about 15,000 annually. One of the causes of death in dialysis pts is hyperkalemia and sudden death (4.4%). Hyperkalemia causes fatal ventricular arrhythmia. Potassium is mainly excreted by the kidney (90%) normally, therefore renal dysfunction easily tempts ESRD pts to hyperkalemia. Potassium is distributed largely in intracellular fluid (ICF), and only 2% is in extracellular fluid (ECF). Cell function including nerve, heart and transmembrane potential, is regulated by potassium concentration in ECF. Many factors influence potassium concentration in ECF, such as dietary potassium intake, insulin, aldosterone, epinephrine, pH, bicarbonate concentration, and osmolality. Most important factor for potassium concentration in ECF is dietary potassium in ESRD. Argamate jelly (Ca polysulfonate) is one of the powerful tools to prevent hyperkalemia in ESRD pts by adsorbing intestinal potassium with almost no adverse effects compared with other potassium adsorbents.

Also Argamate jelly has effective for hyperkalemia caused by ACE inhibitor, ARB (Angiotensin Receptor Blocker) and Aldosterone Antagonist (spironolactone and epleronone) administration. These drugs which inhibit RAAS and used popularly in the world, decrease the speed of renal deterioration and proteinuria in kidney diseases.

Therefore, it is important to understand potassium metabolism in treating kidney disease patients to prevent hyperkalemia.