

Cardiac biomarker indicates fluid overload in dialysis patients

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Nephrologists must consider fluid overload effects when prescribing dialysis, according to a study appearing in an upcoming issue of the *Clinical Journal of the American Society of Nephrology* (CJASN). The fluid overload biomarker, N-terminal pro-brain-type natriuretic peptide (NT-pro-BNP), previously known as a “cardiac biomarker” in dialysis patients, is an important component of managing patients with kidney disease.

Fluid overload can cause misleading increases in body weight. “Assessment of dry or target weight is a fundamental concept in managing patients with end stage kidney disease, as volume overload leads to cardiac dysfunction and increased risk of death,” explains Andrew Davenport, MD (University College London Medical School). Dry weight is the patient’s weight without the extra fluid that builds up between [dialysis](#) sessions.

“Our study did not show any sustained association between NT-proBNP and cardiac function,” comments Davenport. The results contrast with previous studies suggesting that NT-proBNP might be a useful biomarker to predict increased risk of cardiovascular events and death in patients with [kidney disease](#). BNP is a [chemical marker](#) produced by overworked or damaged heart ventricles and accompanied by the loss of sodium through urine. A biomarker is a [protein molecule](#) that indicates progression of disease or response to medical therapy.

Dialysis patients with [heart abnormalities](#) may still have high NT-

proBNP levels, according to an accompanying editorial by Patrick S. Parfrey, MD (Memorial University, St. John's, Newfoundland, Canada). However, when cardiac tests show normal heart function, “high BNP levels are likely the result of blood volume expansion, and require reduction in post dialysis dry weight,” Parfrey writes.

Though this “cardiac biomarker” now appears to be more closely related to fluid status than to heart function, an association with heart dysfunction was found in those who had a history of hypertension and were taking beta blockers. High NT-proBNP levels might also indicate malnutrition, another common problem in dialysis patients.

The researchers measured NT-proBNP levels after a dialysis session in 72 stable dialysis patients. The patients also underwent tests of [heart function](#). NT-proBNP levels were most associated with indicators of fluid overload. Maintaining proper fluid balance is one of the essential functions of dialysis. Excess fluid in the body—also called fluid overload or volume overload—can lead to the development of heart failure.

The study is limited by the fact that it was cross-sectional (all data collected at one time) rather than longitudinal (data collected over a period of time), according to Davenport.

More information: The article, entitled “N-terminal proBNP—Marker of Cardiac Dysfunction, Fluid Overload, or Malnutrition in Hemodialysis Patients?” ([doi 10.2215/CJN.09001209](https://doi.org/10.2215/CJN.09001209)) and editorial, entitled “BNP in Hemodialysis Patients” ([doi 10.2215/CJN.02710310](https://doi.org/10.2215/CJN.02710310)) will appear online on May 27, 2010.

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