Article

Importance of Dry Weight In Dialysis Patients

Dr. Bharat V. Shah
Director, Institute of Renal Sciences, Global Hospital, Mumbai
Managing Trustee, Narmada Kidney Foundation
Secretary, Indian Society of Nephrology, West Zone

Keywords: Dry Weight, Dialysis, Hypotension, Interdialytic Weight Gain

What is dry weight?

In clinical practice, one observes that more that 90% of dialysis patients are hypertensive. An important cause of hypertension is volume overload1. This means extra water (fluid) in the body.

Dialysis patients have practically no kidney function. We know that an important function of the kidney is to maintain a constant volume of the body water. No matter how much water we take, the amount of water in the body will remain constant. This superb job is done by the kidneys which throw out extra water in the form of urine. When the kidneys fail, in most cases they cannot throw out the water taken by the patient. This results in extra body water. The extra body water will manifest in the form of weight gain, high blood pressure, swelling of legs (edema) and face and shortness of breath due to accumulation of fluid in the lungs.

It is not uncommon for a dialysis patient to have extra water without swelling of legs and shortness of breath. These patients manifest only with hypertension. Therefore, in clinical practice, dry weight is defined as the lowest weight tolerated without developing hypotension (low Blood pressure)2. Generally, finding each dialysis patient's dry weight is done by trial and error.

How is dry weight achieved and maintained?

In the initial period, fluid is removed during dialysis until there is no fluid in the lungs, no swelling of legs and improvement in BP. Thereafter, the accumulation of extra water in the body can be made out by weight gain. For example, in a hemodialysis patient, if his/her weight at the end of dialysis is 60 kg and his weight before next dialysis is 63 kg, it means there is an accumulation of 3L of water between the end of last dialysis and beginning of next dialysis. During dialysis, an attempt will be made to remove this 3L of extra fluid. To achieve and maintain dry weight, dialysis patients are instructed to restrict salt and water intake. Salt restriction reduces thirst and thereby helps in restricting accumulation of extra water in the body.

When there is more weight gain (sometimes patients gain as much as 5 to 6 kg weight) in the interdialytic period, more fluid has to be done during 4 hours of hemodialysis. This can cause hypotension, camps, nausea and vomiting. Therefore, patient should be guided to not gain too much weight in the interdialytic period. An interdialytic weight gain of 1 to 1.5 kg would mean removal of that much fluid during 4 hours of hemodialysis and less hemodynamic instability.

Dry weight should be assessed every three to six weeks and adjusted3. Typically, when the patient initiates dialysis, he/she is nutritionally weak and fluid overloaded. Once dialysis is initiated, the extra fluid is removed. This will result in initial weight loss. Then the patient starts feeling better and appetite and nutrition improve. With this his/her weight will improve and his/her dry weight will have to be revised in an upward direction. When a stable patient develops illness, the appetite will go down and he will lose weight. Here, the dry weight will have to be revised in downward direction.

Importance of dry weight

Achieving correct dry weight is very important. When there is fluid overload, it will cause strain on the heart with gradual reduction in the efficiency of the heart. Eventually, heart failure occurs with increased hospitalization and mortality rates. When too much fluid is removed, it will lead to unacceptable degrees of low blood pressure and consequently of ischemia of vital organs such as the brain, gut and liver.

References

1. Diamond SM, Henrich WL: Hypertension in dialysis patients.Int J Artif Organs 9:213 -214, 1986

2. Jaeger JQ and Mehta RL Assessment of Dry Weight in Hemodialysis An Overview JASN February 1, 1999 vol. 10 no. 2 392-403

3. Charra B, Laurent G, Chazot C, Calemard E, Terrat JC, Vanel T, Jean G, Ruffet M: Clinical assessment of dry weight. Nephrol Dial Transplant 11[Suppl 2]:16 -19, 1996