

Body Water Measurement with Segmental Bioelectrical Impedance Analysis on Assessment of Dry Weight in Hemodialysis Patients

Seoung Woo Lee, M.D.

*Division of Nephrology & Hypertension, Department of Internal Medicine,
Inha University College of Medicine, Incheon, Korea*

Introduction

Assessment of hydration status is an important tool for the determination of post-hemodialysis (HD) dry weight. HD patients has markedly expanded extracellular fluid(ECF) compartments and fluid is removed primarily from the ECF during HD. Therefore, to measure ECF compartment seems to give a new insight for the determination of dry weight in ESRD Patients. Bioelectrical impedance analysis(BIA) is a simple and noninvasive electrical method for estimating total body water(TBW) in principles. Multifrequency BIA made it possible on the assessment of body fluid by measuring each body fluid compartments accurately in healthy human adults and in ESRD patients. The purpose of this study is to investigate the role of BIA on the assessment of hydration status by measuring different body fluid compartments. To accomplish this purpose, we used segmental multifrequency BIA equipment which has an ability to measure whole and segmental body fluid amount at the same time. Also we measured inferior vena caval diameter (IVCD), expected TBW assessment with anthropometric equation, plasma atrial natriuretic peptide(ANP) and cyclic guanosine 3'5'-monophosphate(cGMP) concentration.

Patients and Methods

1. Patients

Among 85 patients who had been on HD in Kidney Center, Inha University Hospital, Incheon, 53 were recruited in this study. Inclusion criteria were clinically stable HD patients who had relatively constant dry weight of more than 1 months. Mean age was 53.4 ± 15.0 years, duration of HD was 27.4 ± 18.3 months, male to female ratio was 1.3:1, diabetics were 24(45.3%), height was 162.2 ± 8.0 cm, post-HD body weight was 56.4 ± 10.0 kg.

2. Study protocol

After 1 month of recruit period, study was performed for 3 months. During first period(first 2 months), patients were not changed their dry weight. IVCD and BIA were performed 30-40 min after HD. Nephrologist who was blind in this study clinically assessed patient's hydration status