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Editorial

Bioimpedance: Innovative Approach in Nephrology and Autoimmune Diseases

Editorial

The composition of the human body is considered a useful diagnostic tool in many medical specialties. The recognition of changes in nutrition and hydration of patients is useful in nephrology and in particular in chronic kidney disease where malnutrition and over hydration are conditions that affect the prognosis of these patients. Furthermore, the use of 'traditional' diagnostic tests based on clinical examination and biochemical tests often lead to inaccurate results [1,2].

There are many methods currently used to calculate the body composition: the isotopic assessment, anthropometry, the body density assessment, bone densitometry (DEXA), using magnetic or CT and bio impedance (bio impedance, BIA). BIA considered the most common method used today to calculate body composition because of safety, excellent accuracy, low cost, and ease of use, since it can be performed even at patient's home. This is an easy, non-invasive measurement, which does not take more than 2 minutes to be accomplished.

The operation is based on the principles of bioelectrical impedance (the vector sum of resistance to resistance). Although the use of a frequency for the BIA (50kHz) was the most prevalent method, nowadays the use of multiple frequency BIA has emerged as a method to more advanced and complex theoretical bases. The purpose of this second method is the assessment of total body water more accurately and more precise estimation of the contribution of extracellular and intracellular water in the body [3,4].

There is extensive experience in the use of BIA in patients undergoing hemodialysis and peritoneal dialysis. The parameters calculated by this method in the above patients are very useful in monitoring the lean mass of their body fat and the hydration status [3,4].

However, the most interesting parameter is that BIA has been a new tool in follow-up in patients with advanced chronic kidney disease (CKD) not undergoing hemodialysis or peritoneal dialysis. This method offers patients with CKD the calculation of phase angle, the predictive value of which is important for the clinical course of these patients as well as in other chronic diseases also.

The above is expertise of renal clinic *Athens-nephrology*. BIA technology provides comprehensive information on the state of hydration of the patient in real time, the distribution of water intracellular and extracellular, the ratio of extracellular water relative to the total body water, and the history of the moisturizing of the patient condition. In our practice, in this way we can give useful information in patients undergoing dialysis (determination of dry weight, excess water, etc). Alongside, these patients can get useful information in relation to nutritional support. This information may become useful in any patient leaves the hospital, especially after a long hospitalization [5].

The information provided by BIA technology include: the total amount of body water and the distribution of intracellular and extracellular, the amount of proteins, salts and fat, muscle mass and how it is distributed in the body. Finally provided important information and there is much research interest on the body cell mass, the bone content, basal metabolic rate, arm muscle circumference, etc.

After the plurality of information mentioned, BIA technology, perhaps above all, the use of multiple frequencies instead of only one, allows the physician to calculate the phase angle. Information important for patients with chronic diseases, it can be useful in their clinical course forecasting tool. It is therefore applications both in patients with chronic kidney disease have not resulted in hemodialysis or peritoneal dialysis, and patients with diabetes mellitus, autoimmune diseases, heart failure, chronic inflammations and infections, hypertension, cancers and neurological diseases as well as in athletes [5,6].

It becomes obvious that in any proper organized renal clinic, the provision of services with BIA technology is enriched with the most modern means of helping the patient with chronic kidney disease or undergoing hemodialysis or peritoneal dialysis, or not, but also a multitude of other patients with chronic mainly diseases of other specialties. With the above approach a nephrologist may help the physician of a chronic patient (diabetic, cardiac patients, rheumatologists, etc) to better monitor the clinical course of the patient and to intervene when something deemed by him necessary.

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