Cystic Fibrosis Research News

Title:

Estimating body compositionfrom skinfold thicknesses and bioelectrical impedance analysis in cystic fibrosis patients

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What was your research question?

Skinfolds and bioelectrical impedance analysis (BIA) are simple, quick and non-invasive techniques for estimating body composition. During BIA electrodes are placed on the person's right hand and right foot and an undetectable electrical current is sent through the body. BIA measures the resistance to the flow of current, which depends on the amount of muscle and fat a person has. We wanted to evaluate whether these techniques can be used for routine assessment of body composition in people with cystic fibrosis (CF).

Why is this important?

Body composition analysis is an important part of the nutritional assessment in CF. Weight-based indicators, such as body mass index, cannot detect abnormalities in body composition. Many techniques can be used to do this, but most are only used in research and some cannot be used routinely. In contrast, skinfold measurements and BIA are easy to perform and can be used in any clinical setting. However there are concerns about how valid theyare in people with CF, since they are based on models developed in healthy individuals. Clinicians should know the reliability of these techniques before using them to evaluate the nutritional status of the patient.

What did you do?

We compared data on body composition estimated by skinfolds and single-frequency BIA with data from a standard method (Dual X-ray absorptiometry) in 142 people with CF. Dual

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X-ray absorptiometry is a valid technique that uses low-dose x-rays to measure bone mass, fat mass and lean mass. These tissues partially block the x-rays according to their density. The device records the amount of the x-ray blocked and uses this information to distinguish among different tissues. We also identified how and which measurements obtained from skinfolds and BIA relate to measurements obtained from dual X-ray absorptiometry.

What did you find?

Data obtained by skinfolds and BIA are not comparable to those provided by dual X-ray absorptiometry. The differences are too great to be considered useful in assessing nutritional status of the patient. However we found that skinfolds of the upper arm and the resistance-index, a BIA-derived measure, were strongly related to body composition data obtained by dual X-ray absorptiometry.

What does this mean and reasons for caution?

These techniques cannot be used in clinical practice until specific models developed in people with CF become available. The predictors identified in this study should be tested in future models to improve the validity of these techniques. We only evaluated a single-frequency device but more sophisticated devices, such as segmental- multi-frequency BIA analyzers need to be evaluated.

What's next?

Future research should focus on searching for specific models in people with CF to improve the reliability of these techniques. Furthermore an open question still remains: can these techniques detect changes in body composition induced by illness?

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