

SUMMARY

Effect of rehabilitation in the body mass composition in patients with stroke

Introduction. Stroke is estimated to affect 24-54% of the global population and is one of the leading causes of death. According to World Health Organization over one billion people worldwide are overweight, and approximately 300 million people are obese. The main factors contributing to this situation include insufficient physical activity and unhealthy diet. Among the major consequences of obesity in adults one can distinguish metabolic syndrome and cardiovascular diseases.

Purpose. Assessment of changes in body mass composition (body fat, visceral fat level, muscle mass, total body water) in patients with stroke, following hospital-based rehabilitation.

Material and method. The study was carried out from June 2015 to March 2017 at the Clinical Rehabilitation Ward with Early Neurological Rehabilitation Unit, at the Clinical Hospital in Rzeszów. During that time the total of 1,143 patients received treatment and rehabilitation at the clinic. The study group comprised 403 patients with stroke. The subjects were examined three times. In accordance with inclusion and exclusion criteria 128 subjects were qualified for the first examination. The second examination took into account 114 subjects and finally 100 patients with stroke participated in the third examination. The analysis was based on the results related to the 100 subjects who took part in all the exams. Body mass composition was assessed in all the subjects with Tanita MC 780 MA analyzer, and their height was measured with the stadiometer PORTSTAND 210. Effects of rehabilitation were assessed with Barthel index, Berg scale, Ashworth scale, Brunnström scale as well as symmetry index for lower limb weight distribution (Ws).

Results. Statistically significant change ($p < 0.05$) was identified in body fat mass after the rehabilitation (before 25.76 ± 7.25 vs. after 26.42 ± 7.34). Rehabilitation significantly increased muscle mass (before 69.88 ± 6.99 vs. after 70.53 ± 6.90). Following the rehabilitation the patients showed no signs of dehydration (52.59 ± 5.45) compared to the results before rehabilitation (52.18 ± 5.52), and there was increase in body water percentage. The findings revealed significant reduction in visceral fat level in patients after rehabilitation (9.87 ± 4.54) compared to the results prior to rehabilitation (10.02 ± 4.59). Exam II identified significantly greater benefits from rehabilitation, compared to exam I. The effects of rehabilitation were

maintained for a period of 12 weeks after discharge from hospital. Exams II and III showed that a change in BMI value significantly correlated with effectiveness of rehabilitation.

Conclusions. 1. Following hospital-based rehabilitation there was a significant decrease in body fat mass. This justifies the need for rehabilitation of patients with stroke as it is an important method for secondary stroke prevention. 2. Hospital-based rehabilitation contributed to increased muscle mass, which correlates with improved functional performance in the subjects. 3. Following rehabilitation, the patients with stroke showed no signs of dehydration and there was increase in the total body water percentage. 4. The value of visceral fat level index was significantly reduced which may lead to decreased risk of cardiovascular diseases, including stroke. 5. After hospital-based rehabilitation program was completed, parameters of body mass composition were normalized. These positive effects of rehabilitation were maintained for 12 weeks (exam III). 6. Following hospital-based rehabilitation patients living in rural areas presented with better functional performance. In this case, statistical significance was identified only for the factor of independence in basic activities of daily living, assessed with Barthel index.

Key words. stroke, BMI, body fat, visceral fat level, muscle mass, total body water, functional scales