ваний, в лечении которых применялись антибиотики с целью профилактики осложнений или терапии: ОМЛ — 1, пиелонефрит — 1, двухсторонний вывих С5 позвонка с ушибом спинного мозга — 1, декомпенсация СД 2 типа — 1, болезнь Фара — 1, ОНМК — 3 пациента. Курсы антибиотикотерапии включали в себя препараты следующих групп: b-лактамные антибиотики (цефалоспорины III поколения), макролиды (азитромицин). К основным клиническим проявлениям относились: диарея (4-20 в сутки); абдоминальный синдром; лейкоцитоз (до $51{,}9 \times 10^9$/л), стойкая гипоальбуминемия, гипокалиемия. Диагноз псевдомембранозного колита устанавливался на основании клинических данных и результатов дополнительных методов обследования. Колоноскопия была применена в двух случаях, при этом были выявлены гиперемия слизистой, множественные наложения в виде бляшек и фибринозный налет. Одной пациентке для проведения дифференциальной диагностики с воспалительными заболевания толстой кишки и опухолями выполнена КТ. В двух случаях проводилось качественное определение токсинов А и В *C. difficile* — 2 — положительных (ИФА VIDAS) результата. Лечение ПМК проводили по существующим рекомендованным схемам на протяжении 10–14 суток. При средней тяжести течения — перорально метронидазол по 500 мг 3–4 раза в сутки, при тяжелом течении или при отсутствии эффекта от метронидазола — ванкомицин в суточной дозе 2 г. Во всех случаях в качестве компонента лечения использовали инфузионную терапию, пробиотики (энтерол 250 мг 2 раза в день) с пролонгацией приема препаратов до 4–6 недель для профилактики рецидива заболевания.

Выводы

1. Псевдомембранозный колит — это потенциальное осложнение антибиотикотерапии у пациентов с разнообразной патологией, которое характеризуется повышением частоты рефрактерных и рецидивирующих форм данного заболевания.

2. Перед назначением антибиотиков широкого спектра действия необходимо взвесить и оценить возможные факторы риска возникновения псевдомембранозного колита.

3. Основанием для срочной целенаправленной диагностики *C. difficile*-ассоциированного колита является появление диареи и лейкоцитоза после начала антибиотикотерапии.

4. При подозрении на развитие ПМК на фоне клинических проявлений острого живота показано целенаправленное уточнение диагноза с использованием лабораторных тестов.

5. Лечение включает применение ванкомицина или метронидазола с подключением сорбционной терапии, восстановлением микробной экосистемы кишечника, устранением дегидратации и коррекцией нарушений водно-электролитного баланса.

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BODY COMPOSITION ASSESSMENT WITH BIOIMPEDANCE METHOD

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Introduction

Body composition reflects the balance of physical activity and nutritional habits and can be assessed by different methods. Bioelectrical impedance analysis (BIA) is widely used method for estimating body composition. Since last decade the publications has been increased about BIA as

body composition evaluations are necessary in order to monitor obesity class, nutritional status, training outcomes and general health [1].

Purpose

The purpose of this study is to perform the literature analysis on BIA, its advantages in body composition evaluation and to analyze factors influencing BIA parameters.

Material and methods

The recent publications on BIA application were analyzed. The literature search was conducted with search tools such as PubMed and Medline.

Study results

There are several methods for detection of body composition. The main methods are presented in the Table 1.

Table 1 — Body composition measurements methods

Measurement methods	Advantages	Disadvantages
Bioimpedance analysis (BIA)	Simple, cost-effective and precise	Highly sensitive to changes in body (overhydration or dehydration)
Dual energy X-ray absorptiometry (DXA)	Noninvasive, good accuracy and reproducibility	Exposure to a small amount of radiation
Computed tomography (CT)	Gold-standard imaging technique for body composition analysis at the tissue-organ level	High radiation dose
Magnetic resonance imaging (MRI)	Not using ionizing radiation	High cost owing to scan acquisition and after processing data
Ultrasonography (US)	Simple, portable, safe, and noninvasive	More prone to technical errors

Bioelectric impedance assessments have become increasingly popular for estimating body composition, because it is easy to use, non-invasive, relatively inexpensive, and can be performed across a wide range of subjects with regard to age, and body shape. Evaluation of body composition by BIA is based on the principle that different tissues of human body posses different resistivity to electrical currents [1].

Body composition assessment is based on the principle that the human body is composed of two main compartments, fat mass (FM) and body lean mass or free fat mass (FFM). FFM is composed of bone minerals and body cell mass (BCM) that includes skeletal muscle mass (SMM). BCM contains proteins and total body water (TBW) that represents 73 % of lean mass in normal hydrated subjects. FM and FFM estimations are considered one of the main objective of body composition assessment technique. Variations in BIA parameters among the reference population are due to several factors, but are believed to follow aging factors in addition to gradual changes in life styles [1].

Age differences in body composition assessed by bioimpedance method. Aging is defined as multifactor changing in physical and biological activities of human body that leads to differences in body composition among age groups. With increasing age there is gradual increase in fat mass and spontaneous decrease in lean mass. Fat free mass to free mass ratio increases gradually in response to increase of age and noticeable increment in average weight is seen among elder population compared with adults associated with increment in fat mass. Studies were conducted using BIA method on children, adults and elders population. Muscle mass loss among elderly reduces fat free mass at certain age, followed by decrease in total body water and bone mass [1, 2].

Aging people tend to gain fat and loss muscle without an obvious change in their weight. And even though we need certain amount of fat in our bodies to insure good health excess body fat because of aging has been found to increase the risk of diseases, such as Type II diabetes, cardiovascular diseases and cancer. On the other hand to little body fat can also pose number of health risk, especially for women [1, 2].

Gender differences. Gender is one of the main determining factor for body compartment assessment. It was proved that there are variations in body composition between male and female. Males have greater fat free mass (FFM) than females with different ranges. Mean FFM for males

is 8.9 and 6.2 kg for females and fat mass index (FFI) increased based on age in females from 5.6 to 9.4 and from 3.7 to 7.4 in males. In a recent study using BIA, it was concluded that for all age ranges, males have less fat mass and more fat free mass than females. Studies showed that males have less total body water (TBW) than females. TBW volume for males start from 1.2 L compared with 3.75 L for females. Significant gender differences were observed in BMI fitness score, percent body fat and other parameters of body composition. Prevelance of obesity, percent body fat (% BF) and poor fitness is high with significant gender difference [1, 3].

Bioimpedance analysis in athletes. Comparison of body composition of normal and athletes were found in tissular, hydration and metabolic indices. They were significant in expected direction but quiet weak and additional data from reference technologies would set if specific equations are needed. Athletes are in better shape than healthy adults. Male athletes differ by more muscular mass; female athletes also have more favourable fat/fat free balance.

At metabolic level athletes indices suggested a better physical working capacity as evidenced by higher body cell mass on body mass ratio (BCM/W) and better cellular membrane exchange capacity as evidenced by higher metabolic activity index (MAI). MAI was higher in female athletes than healthy ones but did not reach significance threshold. Considering parameters such as overtraining, fatigue and performance could help understanding MAI variation factors in peculiar population [4]. BIA has been used to compare different types of athletes. A study found increase FFM in body builders. Strength and endurance trained men had less FM and a greater TBW % compared with untrained men and that strength — trained men had greater FFM compared with endurance trained and untrained men [4, 5].

Conclusions

Bioimpedance provides a non-invasive, economic and reliable means of measuring body composition indices. There are variety of methods applied for interpretation of measured bioimpedance data and wide range of utilization of bioimpedance in body composition estimation and evaluation of clinical status. It also can be used for the assessments of abnormal loss in lean body mass and unbalanced shift in body fluids and it can help in disease prognosis and monitoring of body vital status.

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АНАЛИЗ ФИЗИЧЕСКОГО РАЗВИТИЯ ГЛУБОКО НЕДОНОШЕННЫХ ДЕТЕЙ С АНТЕНАТАЛЬНОЙ ГИПОТРОФИЕЙ НА СТАЦИОНАРНОМ ЭТАПЕ ВЫХАЖИВАНИЯ

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Введение

Частота преждевременных родов в Республике Беларусь сопоставима с уровнем экономически развитых государств и составляет 5–7 % [1]. Тенденции к снижению этого показателя в течение последних лет не отмечается [1]. Успехи неонатальной реанимации, по-