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Effectiveness of the salt therapy– current knowledge status

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Abstract:

Introduction: The salt therapy is a form of the aerosol therapy using sodium chloride in different forms. The beginnings of the halotherapy date back to the nineteenth century when it has been practised as a medical treatment in the old salt mines of Central and Eastern Europe. The salt therapy as an adjuvant method seems to have positive impact on treatment of respiratory system diseases and dermatological conditions. We distinguish two types of the dry salt therapy: halotherapy and speleotherapy.

Purpose of the article: We aimed to evaluate efficacy of the salt therapy in treatment of pulmonary and dermatological disorders.

Material and methods: We searched three electronic databases: Pubmed, Web of Science and Google Scholar from inception to the August 2022 and conducted a review. The following descriptors were used: „halotherapy”, „speleotherapy” and „salt therapy”.

Results and conclusions: The salt therapy improves mucociliary elimination, pulmonary functions and reduces airway's irritation. It also reduces intensity of the dryness, redness and stimulates regenerative processes in the skin. This method is safe and do not cause the serious adverse effects. Therefore, due to its potential benefits, it should be considered as an additional therapy beside standard treatment procedures inter alia in the asthma, chronic obstructive pulmonary disease, psoriasis, atopic dermatitis. Moreover, halotherapy has positive impact on children's general development as it enhances the growth and weight gain. However, scientific evidences for effectiveness of the salt therapy are limited. There is a need of further studies assessing effectiveness of the long-term salt therapy on the larger group of patients.

Keywords: „halotherapy”, „speleotherapy”, „salt therapy”

Introduction

The salt therapy is a form of natural, aerosol therapy of pulmonary tract diseases using sodium chloride in different forms (1). We distinguish two types of the dry salt therapy: a halotherapy and a speleotherapy. The speleotherapy refers to naturally occurring salt environments while the halotherapy focuses on salt enriched environments (2,3). On account of the stable, low air temperature, high humidity, low level of natural radioactivity, lack of air pollution and allergens and presence of aerosol elements, the microclimate of salt caves is unique (4,5). Aerosol elements include magnesium what is responsible for spasmolytic effect on smooth muscle cells and calcium what is capable of inducing anti-inflammatory effects. Absence of solar radiation, and in consequence ozone is beneficial for health because in higher concentrations it negatively affects the cardiovascular and respiratory system (5). The chambers used in the halotherapy imitate the salt cave's microclimate (6).

Patients should stay in such conditions regularly for about 30 to 60 minutes and breathe the saturated air (7,8). The halotherapy and the speleotherapy improve quality of life of patients diagnosed with respiratory system, chronic diseases: asthma, vasomotor rhinitis, chronic obstructive pulmonary disease (COPD), cystic fibrosis. Moreover, there are attempts of using the salt therapy in dermatological disorders: eczema, dermatitis, psoriasis, pyoderma, acne (6–8).

Apart from the therapeutic influence, sessions in the salt caves have relaxing impact on patients and support in maintaining healthy lifestyle (9). What is innovative, a patient can participate in other activities during session in the salt chamber. The salt therapy can be combined with the pulmonary rehabilitation (10).

Contraindications for the salt therapy involve: status asthmaticus, severe persistent bronchial asthma, tuberculosis, emphysema, severe hypertension, renal disease, epilepsy, claustrophobia, hyperthyroidism, acute stage blood disorders, and malignant disease (11). This therapy seems to be safe and well tolerated (8,12). Increased coughing during therapy can be observed in mechanism of cleaning the respiratory tract. Rare adverse effects are conjunctivitis and skin irritations (8). Nonetheless, the air in the caves should be monitored to ensure a safe environment for therapy (13).

The history of salt therapy

The beginnings of the halotherapy date back to the nineteenth century when it was used to alleviate chest conditions (2,3). The salt therapy has been practised as a medical treatment in the old salt mines of Central and Eastern Europe for centuries (14,15). It was first described by the Polish physician Filip Brodowski in 1843 who noticed that salt mines' workers presented good quality of health despite difficult work conditions (3,4,11). In 1958 in the salt mines of Velichka the first salt medical center for pulmonary diseases was established (16). Presently, the salt therapy is widespread in the Eastern Europe but the scientific evidences are often not available in English.

Purpose

Thus, we aimed to evaluate efficacy of salt therapy in treatment of pulmonary and dermatological disorders.

Material and methods:

We searched three electronic databases: Pubmed, Web of Science and Google Scholar from inception to the August 2022 and conducted a review. The following descriptors were used: „halotherapy”, „speleotherapy” and „salt therapy”.

Description of the state of knowledge

The salt therapy in dermatological and pulmonary disorders

Salt has an antibacterial, antimycotic, anti-inflammatory qualities. Impact of the speleotherapy on dermatological and pulmonary disorders on a cellular level were investigated in the experimental study on rats. The samples of lung and skin fibroblasts from the rats' lung and hypodermic tissue were taken. It was confirmed that the speleotherapy induces changes in morphology and protein expression of the fibroblasts. Phenotypically changed fibroblasts may contribute to the remodeling of the respiratory tract within asthmatic conditions. Improvement of morphologic parameters was observed also in rats with injuries and burns after speleotherapy (17). Halotherapy leads to pH normalization, stimulates regenerative processes, improves skin microcirculation (8). Salt deposition on the skin reduces intensity of the dryness, redness and peeling of the skin in the psoriasis and atopic dermatitis (18).

The salt therapy in the asthma

Mazloomzadeh in the randomized crossover trial confirmed that staying in a salt room had a significant effect on raising PEF (2). In the other randomized controlled trial such intervention increased FEV1 parameter. Beside, the improvement of FEV1, PEF, FVC was proven after use of the salt inhaler in the randomized, double blind, single crossover trial (2). In paediatric patients diagnosed with the asthma the outcomes of researches were ambiguous. Bar-Yoseph reported that there was no improvements in spirometry parameters however there was improvement of health related quality of life during the period of the halotherapy (19). Mazloomzadeh found that the salt therapy had a significant effect only on raising the morning and evening PEF in children aged 6-14 years old. Nonetheless, there was no revealing effect on cough, wheezing, dyspnea and frequency of rescue medication. The fact is that no side effect was observed (20).

The salt therapy in the chronic obstructive pulmonary disease (COPD)

Exposition of patients diagnosed with COPD to a salt cave impacted on normalization of CD4 and CD8 levels, increase of B lymphocytes and immunoglobulins (2). Similarly to effects of the salt therapy in the asthma, it improves lung functions, spirometric parameters, oxygen saturation in arterial blood. It liquefies the airway secretions, what facilitates the expectoration of secretions. There are evidences based on the randomized controlled trial that the speleotherapy cause increase in lymphocytes level, neutrophil phagocytosis activity. The halotherapy decreased bronchial obstruction and medication use in patients diagnosed with COPD. It improves life quality by decreasing exacerbations, reducing hospitalization, improving effort tolerance (6).

Kostrzon in the randomized controlled trial compared the effects of the underground speleotherapy to rehabilitation conducted on the surface. Patients who underwent the underground rehabilitation, presented greater reduction in dyspnea and improvement of exercise capacity. What is more, beneficial impact of speleotherapy maintained 6 months after rehabilitation (21).

Sevostyanova examined effectiveness of the halotherapy in patients with COPD coexisting with hypertension. What is interesting, reduction in blood pressure was observed in the research group (22).

The salt therapy in the chronic bronchitis

The halotherapy is also an effective method of treatment of patients in sanatorium with the chronic bronchitis. It improves lung function, increases tolerance to physical effort and effectiveness of sanatorium treatment (23).

The salt therapy in the adenoidal hypertrophy

Gelardi observed reduction of the adenoid and tonsillar hypertrophy in children aged 4-12 years who had the halotherapy. Moreover, improvement of hearing levels and tympanometric values and the reduction of the inflammatory immune cells in nasal cytology were noticed (24). The halotherapy was safe, no adverse effects were reported. What is more, paediatric patients treated the therapy as the opportunity to play (14).

The salt therapy in the acute sinusitis

The halotherapy was found effective in the treatment of the acute purulent maxillary sinusitis without puncture (25). It was also described as a useful method of the therapy in children with the rhinosinusitis (26).

The salt therapy in supporting children's development

The salt therapy can be recommended not only for patients diagnosed with disease entities. Sandu found that exposure of children to saline aerosols has positive impact on their general development. Exercises in the halochambers conditions enhanced the growth and weight gain to a greater extent than in the group of children who practised in gym classrooms or in the open space. The improvement was more distinct in girls than in boys (27).

Conclusions

Taking all these factors into consideration, available researches allow to conclude that the salt therapy appears to be safe and promising therapy. The halotherapy may constitute important part of holistic approach in the therapy of respiratory and dermatological system diseases. In the face of increasing urban air pollution and increased drug resistance, especially antibiotics, complementary treatment methods like the salt therapy should be developed (4). However, the scientific evidences for effectiveness of the salt therapy are limited and more long-term randomized controlled trials on the larger group of patients are needed (5). It should be highlighted that it can not be recommended as a standard treatment of respiratory and dermatological diseases (15).

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