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## W numerze m.in.:

- Balneotherapy: from Basic Research to Clinical Challenges
- Pre-habilitation in Enhanced Recovery After Surgery Programs: A New Potential for Balneology and Physical Medicine to Benefit Patients
- The Influence of Age and Gender on Human Organism as a Complex System During Peloidotherapy Procedure
- Analysis of Physical Therapy in Psoriasis
- SUMMARY OF PAPERS



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**44 WORLD CONGRESS  
OF INTERNATIONAL SOCIETY  
OF MEDICAL HYDROLOGY**

**44 ŚWIATOWY KONGRES  
MIĘDZYNARODOWEGO TOWARZYSTWA  
HYDROLOGII MEDYCZNEJ ISMH**

**XXVII (XXXI) CONGRESS  
OF THE POLISH ASSOCIATION  
OF BALNEOLOGY AND PHYSICAL MEDICINE**

**XXVII (XXXI) ZJAZD  
POLSKIEGO TOWARZYSTWA  
BALNEOLOGII I MEDYCYNY FIZYKALNEJ**

**Wieliczka (Poland)**

**13-16.06.2019 r.**

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**STRESZCZENIA REFERATÓW  
SUMMARY OF PAPERS**

disorders (16.90%). Most were aged between 10 and 14 years (42.26%). Adult patients hospitalized in S.B.R.T are between 16 and 90 years. In the third quarter of the year (July, August, September) there was the highest number of hospitalizations (32,54%). Degenerative rheumatoid diseases (49.77%), inflammatory rheumatoid diseases (3.07%) and posttraumatic injuries (7.59%) were ranked first. 40.30% of the patients presented with neurological disorders, of which 12.59% central and 27.71% peripheral. The patients came from forty two counties of fifty two of Romania, mostly from Constanta (29.83%) and Bucharest (16.69%), while (0.15%) foreigners were hospitalized. During the year, eighty two thousands consultations of Rheumatology and two thousands five hundreds fifty one at the emergency room, six hundreds twenty four psychological counseling sessions and one thousand three hundreds thirty seven speech therapy were performed. **Conclusions:** S.B.R.T. is a medical unit where approximately fourteen thousands patients, children and adults, are annually hospitalized, the pathology being varied. Adults present mainly degenerative pathology, but there is a large number of patients with central and peripheral neurological disorders, but also with post-traumatic lesions. Children are admitted in order to manage secondary motor deficits from congenital or acquired central neurological diseases.

## EFFICIENCY OF HALOTHERAPY ACCORDING TO CLINICAL RESEARCH DATA

**Alina Chervinskaya**

Central State Medical Academy of Administration of the President of the Russian Federation, Russia

Halotherapy belongs to non-drug therapies based on the use of the salt air environment in the room that is close in the parameters of the conditions of underground salt speleoclinics.

Halotherapy technology has been known and used in medical practice since the beginning of the 90s of the last century (about 30 years). Therapeutic properties of the atmosphere of underground caves lie at the heart of halotherapy. These caves are now used in the resorts of Poland, Austria, Germany, Slovakia, Hungary and other countries; the method is called speleotherapy, subterraneoterapia (Pol.). The main factor that has a therapeutic effect for respiratory diseases is respirable particles of natural rock salt suspended in the air.

Halotherapy is widely used in Eastern and Western Europe, USA, Canada, Australia, New Zealand, China, Cyprus, India, Turkey and other countries. There are numerous sites on the Internet offering services of halotherapy in medical and health centres (keywords: «галотерапия», «соляная терапия», «halotherapy», «salt therapy», «salt room», etc.).

The method of halotherapy is officially authorized by Ministry of Public Health of Russian Federation, Lithuania Republic. Many years of experience in the development and implementation of the salt air microclimate in the premises (salt rooms, halochambers) allowed improving the method of halotherapy and equipment for its realization. In 1991 the concept of controlled halotherapy was developed. To improve the efficiency and safety of the treatment, it was considered appropriate to carry out an aerosol dispensing and management level of concentration of salt aerosol per cubic meter of air. Devices were created for controlled halotherapy – dosing halogenerators – ASA- 01.3, ASG-01 (“Aeromed” Russia, St. Petersburg) and GDA-01.17 (“Halomed” UAB, the Republic of Lithuania, Vilnius). In these devices, the same medical factor is used for treatment – dry salt aerosol of sodium chloride with the same parameters that is confirmed by the specifications and conditions for the use of devices.

Halotherapy technology have been presented as repeatedly at scientific forums: at the Russian Respiratory Society, the Russian Society of Pediatricians, The International Congresses on Medical Rehabilitation, the All-Russian Congresses “Zdravnica”, the European Respiratory Society (ERS), the International Society of Medical Hydrology, Balneology, and Climatology (ISMH, International Society ‘Interasma’, the Polish Association of Balneology and Physical, at leading Russian and international exhibitions of medical and health equipment in Moscow, St. Petersburg, many other Russian cities, Richmond, Hannover, Dusseldorf, Stuttgart, Bologna, and others.

To summarize the clinical data on the method of halotherapy and their evaluation, a search using a number of sources was conducted. The following electronic databases were used: the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, MEDLINE, EMBASE, CINAHL, ERS-education.org, clinmedlibrary.com, balneologia.pl, fizioterapiya.info, scientiapress.com, nb.nsmu.ru, scholar.google.com, nlr.ru, Pedro. The keywords used: halotherapy, halochamber, haloroom, speleotherapy, salt therapy, dry sodium chloride aerosol. For thematic samples, reference lists found in the articles were used. More than 400 articles and essays on the subject were found. Information about the method of halotherapy, mechanism of its action, results of the research and efficiency are presented in a number of scientific reviews. This analysis includes publications of original researches that meet the requirements for clinical studies in accordance with Good Clinical Practice rated under Strength of Recommendation. The generalized analysis of the efficiency and safety of the method of halotherapy included 17 selected publications on the results of clinical studies. The data allowed the study to evaluate the effect of halotherapy on clinical symptoms of various respiratory diseases and ENT pathology, quality of life, use of medication, respiratory function, immunological, biochemical and bacteriological tests.

These studies provide evidence of the effectiveness of halotherapy in adults and children with asthma, acute and chronic bronchitis, COPD, cystic fibrosis, frequent acute respiratory viral infections and ENT pathology. Application of halotherapy increases efficiency of treatment and rehabilitation, quality of life, allows reducing drug burden, and increase the remission period of disease. The main acting factor of halotherapy – dry salt aerosol of sodium chloride has an anti-inflammatory and antimicrobial activity in the respiratory tract, mucoregulatory effect, enhances drainage function of bronchus, improves local immunity and restores biocenosis. Halotherapy has an effect on various parts of the defence system, stimulates mechanisms of sanogenesis of the respiratory tract.

The impact of dry salt aerosol on various pathological processes in the respiratory tract and human organism as a whole and a possibility of selecting the parameters in controlled halotherapy ensure the method adaptability to the conditions of different areas of rehabilitation medicine and balneology.

## **EXPLORING THE REVENUE GENERATING POTENTIAL FROM HOT SPRING TOURISM (BALNEO-TOURISM) IN NIGERIA**

**K'tso Nghargbu, Rifkatu Nghargbu**

Department of Geology and Mining, Nasarawa State University Keffi, Nigeria

Nigeria is one of the naturally endowed nations of the world with many varieties of resources in land and water as well as good climate, vegetation and rich culture. With this, Nigeria is qualified to be one of the best tourist destinations of the world. Among many others, solid minerals and hot-springs are part of resources that have not been harnessed. Geological research shows that there are over 9 unutilized hot springs in Nigeria with great economic potential, some of the best in Africa. On the other hand, Poland, Japan, and China have harnessed their hot springs which provides for more than 10% of government revenue. This paper proposes the introduction of hot spring tourism to Nigeria as a means of economic diversification and as treatment procedure. Hot springs in Nigeria are one of the best in West Africa and have similar properties with that of Europe which can be harnessed for medical treatment as well as tourism. Also, Nigeria meets conditions required for starting Balneo-tourism industry and has the prospects to be the first of its kind in West Africa.

## **THE EFFECT OF BALNEOTHERAPY ON CHANGES IN THE FUNCTIONAL STATE OF PATIENTS WITH KNEE JOINT OSTEOARTHRITIS**

**Lina Varzaityte, Raimondas Kubilius, Arvydas Balcius, Kestutis Ramanauskas**

Lithuanian University of Health Sciences, Department of Rehabilitation, Kaunas, Lithuania

**Introduction:** The treatment of knee joint osteoarthritis (OA) using pharmaceutical and non-pharmaceutical measures remains a topical subject. The purpose of this study is to assess the effect of natural factors (mineral water and mud) on changes in the functional state of patients with knee joint OA. Methodology: 92 adult people with grade I–III knee joint OA according to the Kellgren and Lawrence scoring system participated in the study. The subjects received 10 mineral water bath or mud application procedures and physical therapy every other day. The control group got physical therapy every other day. The effectiveness of the treatment was assessed on the basis of anthropometric changes of data, VAS, SF-36, KOOS questionnaire indicators.

**Results:** Significantly greater walking speed, test of 5 sit downs/stand ups, circumference of a knee joint and calf, flexion and extension range, flexor and extensor strength after treatment lasting 1 month were obtained in the intervention group. After 1 month after treatment pain intensity scores over the past month and when changing position were significantly higher in the control group. The most significant changes in SF-36 were identified after 1 month after treatment: physical activity increased and pain decreased in the intervention group. There was no significant difference between the averages of any KOOS subscale in groups. However, average percentages of symptoms, stiffness and pain in the intervention groups were significantly better and lasting 1 month. Conclusion: in the intervention group, where natural factors were applied (mineral baths and mud applications), after treatment and after one month after treatment anthropometric data significantly improved, pain intensity and joint stiffness decreased, physical activity increased compared to the control group. Future randomized controlled studies are needed to confirm these results. Moreover, further studies involving a higher number of participants with a longer period of observation are encouraged to shed more light on this subject.