



Sanatorium rehabilitation of patients with arthropathies

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Annotation

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The paper presents effectiveness of sanatorium-and-spa care for patients with arthropathies to the extent of its standard with addition of naftalan application and darsonvalization under conditions of the specialized sanatorium institution. The role and the place of the standard of sanatorium-and-spa care for patients with arthropathies are shown. Significant difference in frequency of use of some methods of intervention (radon baths, sinusoidal modulated current, ultrasound, low-frequency laser radiation, naftalan application, etc.) is revealed in groups of patients with positive and negative treatment outcomes.

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Diseases of the musculoskeletal system and connective tissue are common causes of long-term disablement and loss of ability to work. It is deemed that the most effective methods of secondary prevention of exacerbations and complications of chronic arthroses and arthropathy is rehabilitation treatment carried out both in outpatient and hospital settings [4-7,11,12]. More comprehensive options for treatment of patients with these pathologies are present in sanatorium-and-spa institutions. In Azerbaijan, there are specialized institutions (sanatoriums "Shikh" and "Naftalan") for sanatorium-and-spa care for patients with arthropathies. During treatment of patients in these sanatoriums, a full set of methods of intervention specified in the standard of the Azerbaijan Republic [1-3] and the Russian Federation [8] is used. In addition, naftalan therapy and other local resources are widely used for treatment of patients. Effectiveness of use of the standard of sanatorium-and-spa care for patients with arthropathies and its predictors are hardly covered in literature. This paper summarizes experience of standard implementation in the setting of use of other methods of intervention through the example of the specialized sanatorium "Shikh".

Study materials and methods. The unit of observation was a patient of the sanatorium "Shikh". The volume of total population amounted to 1,007 patients with arthropathies that received treatment in 2012. Observation was performed through complete coverage, which excludes the possibility of systematic error. The sample size is sufficient to prove validity of the null hypothesis with probability greater than 95% with the highest possible marginal error. The maximum marginal error ($p=50$; $q=50$; $n=1007$; $m=1.58$; $t=1.96$; $tm=3.09$) is determined with the probability of alpha error of less than 0.03 [9;10]. The frequency of therapeutic intervention methods

presented was determined, and comparison with such according to the standard of sanatorium-and-spa care for patients with arthropathies was performed.

Effectiveness of treatment was evaluated by medical commission in the form of two options: improvement; no change and deterioration. Among patients with positive (improvement) and negative (deterioration and no changes) treatment outcome, subjects with the same age and gender, diagnosis and the same duration of pathology severity were selected by "case-control" method, and a fourfold table was compiled according to the following scheme [9;10]:

		Treatment outcome	
		positive	negative
Method of therapeutic intervention	applied	a	b
	not applied	c	d

Using these materials the following was determined:

- Significance of probability differences of treatment method use in groups with positive and negative treatment outcome (using the chi-square);
- Sensitivity (Se) – use of the method of therapeutic intervention [a : (a+c)];
- Specificity (Sp) – non-use of the method of therapeutic intervention [d : (b+d)];
- Prognostic value (PV+) of use of the method of therapeutic intervention [a : (a+b)];
- Prognostic value (PV-) of non-use of the method of therapeutic intervention [d : (c+d)];
- Likelihood ratio [Se : (1-Sp)].

Results obtained and their discussion.

The frequencies of use of certain methods differ from each other. The most frequently used methods of therapeutic intervention, except

for therapeutic exercise (100%) and diet therapy (100%), included massage (88.5±1.0%), naftalan application (54.3±1.6%), terrainkur (50.8±1.6%), darsonvalization (48.0±1.6%), radon baths (31.0±1.5%) and ultrasound (31.2±1.5%). Relatively less frequently gas (5.6±0.7%), aromatic (5.1±0.7%), contrast (3.2±0.6%) and local baths (5.2±0.7%), as well as mechanotherapy (1.5±0.4%), reflexotherapy (6.1±0.8%), and manual therapy (1.8±0.4%) are prescribed, which corresponds to standard conditions. However, full compliance with standards is not ensured in a number of cases. Firstly, the standard does not specify naftalan application and darsonvalization, and in the sanatorium "Shikh" the majority of patients are provided with these methods of therapeutic intervention. Secondly, in terms of administration of mineral water (0.21 and 0.30), use of contrast baths (0.03 and 0.02), reflexotherapy (0.06 and 0.05), and manual therapy (0.02 and 0.01) actual prescriptions differ from the standard. Full compliance with the standard cannot be ensured, since the standard does not contain a clear specification of indications for selection of the particular method of intervention. Simple listing of the set of methods is a defect of the existing standard.

In general, during the period of treatment in the sanatorium one patient receives 7.8 methods of therapeutic intervention, among which 6.8 are included in the standard set of treatment methods.

According to the results of the treatment, in 80±1.3% of cases doctors have noted improvement of basic parameters, which included both subjective and objective indicators.

Groups of patients with positive and negative treatment outcome had no statistically significant ($\chi^2 < 3.8$; $u = 1.0$; $P > 0.05$) difference from each other in terms of frequency of most methods of therapeutic intervention.

Probability of use of therapeutic intervention methods in the group of patients with positive treatment outcome (sensitivity) varied between 2 and 100%, its high value is characteristic of therapeutic exercise (100%), terrainkur (66%), massage (98%), and naftalan application (60%). Very low probability of use is characteristic of manual therapy, reflexotherapy, mechanotherapy (<3%), of gas, contrast and aromatic baths (<6%). The mean level of probability of use is typical for darsonvalization (40%), mud and radon baths (30 and 40%), intervention with sinusoidal modulated currents (38%), ultrasound (36%) and low-frequency laser radiation (30%).

Probability of non-use of therapeutic interventions in the group with negative treatment outcome (specificity) varied between 0 and 100% depending on the method of intervention. Maximum levels of specificity were characteristic of contrast baths (98%), manual (98%) and mechanotherapy (96%), gas (94%) and aromatic baths (94%).

Prognostic value of prescription of individual methods of intervention ranged from 25 to 75%. Higher prognostic value was noted for prescription of radon and contrast baths, interference and sinusoidal modulated current, ultrasound, and low-frequency laser radiation ($PV > 67\%$). Prognostic value of non-use of different methods mostly ranged from 44.4 to 61.0%, only non-prescription of massage has high prognostic value (91.7%).

Conclusions

1. The standard of sanatorium-and-spa care for patients with arthropathies, outlining a set of recommended methods of therapeutic intervention as a probabilistic indicator calculated per a statistically average patient, has significant importance for planning resources of the sanatorium.
2. Patients with arthropathies with different treatment outcomes under sanatorium conditions (improvement or no change) differ from each other in frequency of use of radon baths, sinusoidal modulated current, ultrasound, low-frequency laser radiation, massage, terrainkur and naftalan therapy.

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