Method for predicting meteopathies in patients with arterial hypertension

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Background: Climatotherapy, as part of the spa stage of treatment, with arterial hypertension can give both positive and negative effects in the event of meteopathic reactions. The risk of meteopathies is especially high in patients coming from northern and eastern regions.

Purpose: Was to predict periods of increased risk of meteopathy development.

Methods: The study lasted 22 months, from January 01, 2019 to October 31, 2020 in the city of Gelendzhik (44 ° 36 'north latitude 38 ° 08' east longitude). The source of meteorological data: the site Gismeteo.ru, the Gelendzhik weather station and the ambulance data of the cities of Gelendzhik (12,268 requests) and Novorossiysk (12,226) in total (24,494 requests), the ambulance crews of which serve the area. Nonlinear logit regression using the maximum likelihood method was used to calculate the model.

Results: A prognostic model was built to increase the risk of developing a hypertensive crisis in the studied population; the main indicators of climatic and geomagnetic conditions were used as the studied variables. The sensitivity of the used logistic regression method was 56.0%, and the specificity was 77.3%. The overall accuracy of the model under study was 76.0%. In the winter period, according to the compiled prognostic model, no more than 75.0% of days are accompanied by a low risk of developing hypertension, in the spring period their share decreases to 59.0%, in the summer it is 89.0%, and in the autumn period - 77. 0%.

Conclusion: The developed logistic regression models make it possible to more accurately calculate the individual risks of developing a hypertensive crisis in patients with arterial hypertension and develop an individual treatment strategy.