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ASSESSMENT OF THE ANTICARIOUS EFFECTIVENESS OF THERAPEUTIC AND PREVENTIVE COMPLEXES IN RATS WITH DISORDERS OF TOOTH ERUPTION TIMING

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Abstract. The theses present a fragment of an experimental study devoted to assessing the anticaries effectiveness of the developed therapeutic and preventive complexes in rats with early and delayed tooth eruption against the background of a cariogenic diet. The number of carious cavities and the depth of carious lesions of the teeth were analyzed as the main effectiveness criteria. It was established that the use of TPC No. 1 in animals with early tooth eruption and TPC No. 2 in animals with delayed tooth eruption contributed to a pronounced decrease in the intensity of the carious process.

Keywords: caries, tooth eruption, cariogenic diet, therapeutic and preventive complex, experimental animals.

Relevance. Disorders of tooth eruption timing are among the factors that may influence the formation of a cariogenic situation in the oral cavity and increase the risk of damage to the hard tissues of the teeth. Experimental substantiation of therapeutic and preventive measures aimed at reducing the intensity of the carious process under conditions of altered eruption timing requires special attention. Therefore, assessment of the number of carious cavities and the depth of carious lesions is informative for characterizing the effectiveness of the proposed complexes.

The aim of the study was to assess the effect of the developed therapeutic and preventive complexes on the number of carious cavities and the depth of carious

lesions of the teeth in rats with disorders of tooth eruption timing against the background of a cariogenic diet.

Materials and methods. The experimental study was performed on rats in which early tooth eruption was modeled by exposure to L-thyroxine, while delayed tooth eruption was modeled by administering antibiotics or mercazolil to females during pregnancy and lactation. The animals were kept on a modified cariogenic diet. TPC No. 1 was used for preventive treatment in the group with early tooth eruption, and TPC No. 2 was used in the groups with delayed tooth eruption. The mean number of carious cavities per rat and the depth of carious lesions of the teeth in points were determined.

Results. In animals with early tooth eruption that were kept on a cariogenic diet, the number of carious cavities was 9.6±0.5 compared with 7.0±0.6 in the control group, and the depth of carious lesions was 10.1±0.6 points compared with 8.5±0.4 points, respectively. The use of TPC No. 1 reduced the number of carious cavities to 3.5±0.3 and the depth of lesions to 3.6±0.3 points. Thus, compared with the group with early tooth eruption without the preventive complex, the number of carious cavities decreased by 2.74 times, and the depth of carious lesions of the teeth decreased by 2.8 times.

In the group of animals with delayed tooth eruption formed against the background of antibiotic administration, the number of carious cavities was 9.3±0.5, and the depth of lesions was 10.0±0.5 points. After the use of TPC No. 2, these indicators decreased to 3.2±0.2 and 3.3±0.2 points, respectively. Thus, the number of carious cavities decreased by 2.9 times, and the depth of carious lesions of the teeth decreased by 3.03 times.

A similar anticaries effect of TPC No. 2 was also established in the model of delayed tooth eruption induced by mercazolil. In rats without the preventive complex, the number of carious cavities was 9.9±0.5, and the depth of lesions was 10.4±0.7 points. In animals that received TPC No. 2, the corresponding indicators were 3.8±0.2 and 4.0±0.3 points. This corresponds to a 2.6-fold decrease in the number of carious cavities and a 3.1-fold decrease in the depth of carious lesions.

The obtained results indicate that both analyzed indicators demonstrate a unidirectional positive trend after the use of therapeutic and preventive complexes. The most pronounced decrease in the number of carious cavities was observed in animals with delayed tooth eruption against the background of antibiotic therapy after the use of TPC No. 2, whereas the greatest reduction in the depth of carious lesions was found in animals with delayed tooth eruption induced by mercazolil.

Conclusions. In rats with early and delayed tooth eruption against the background of a cariogenic diet, an increase in the number of carious cavities and in the depth of carious lesions of the teeth was observed compared with intact animals, which confirms the negative effect of disorders of tooth eruption timing on the condition of the hard tissues of the teeth.

The use of TPC No. 1 and TPC No. 2 contributed to a significant decrease in the intensity of the carious process: the number of carious cavities decreased by 2.6-2.9 times, and the depth of carious lesions of the teeth decreased by 2.8–3.1 times.

This makes it possible to consider the proposed complexes as an effective approach to the prevention of carious lesions under conditions of disturbed tooth eruption timing.

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