replaced by crude connective tissue macroscopically. The focuses of the periosteous reaction as a nonconciderable bone deformation were fixed on the vestibular and tongue surface. The height of the alveolar appendix was considerably reduced in these regions. Animals of the groups II and III had the mucous tunic of the alveolar appendix of the lower jaw at the region of the extracted tooth holes filled in with the granulations of «Byossital – 11» and «Kafam» of the pink color, no inflammation, fistula and deformations found. The height of the alveolar appendix kept the physiological level and without signs atrophy. Skeletonization of the parts of the holes macroscopically demonstrated there complete filling in with regenerated mosaic bone structure.

Conclusion

It's obviously clear that macroscopic clinical control for the process of the extracted tooth holes recovery in experiment demonstrated advantages of implantation with «Byossital - 11» and «Kafam». We continue examinations of this kind.

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STRUCTURAL DISORDER OF TOOTH GERMS IN THE ANTENATAL PERIOD UNDER LOW DOSES IONIZING RADIATION EXPOSURE IN ACUTE EXPERIMENT

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Introduction

The study of ionizing radiation influence on dental system was begun with the assessment of large doses exposure during radiation therapy. Investigations of oral cavity radiolesions in general radiation exposure in low and mean doses are not numerous [1, 2].

The aim of this work is to study odontogenesis in 20-day old animals' foetuses after a single exposure to low doses ionizing radiation.

Materials and methods

The experiment was carried out on 4-month old albino rats of mongrel gregarious breeding with initial body weight of 0,16 – 0,18 kg. Pregnant rats were exposed to external acute γ-radiation on «IGUR-1» unit (the radiation source – Cs-137, dose rate – $1{,}033 \times 10^{-3}$ Gy/sec) in 0,5 Gy dose on the 15th gestation day. The animals were kept at vivarium conditions. Tooth germs of rats' 20-day old foetuses were studied histologically.

Results

«Finger-shaped» tooth buds inherent to the period of tooth germ anlage and formation were still seen in the experimental animals. Thin epithelial necks connecting dental lamina with enamel organs were present. The enamel organs were large, well-formed, scyphiform, as those in the control group. But there were significant abnormalities among them. Thus, some enamel organs had poorly marked pulp. Thin outer enamel epithelium consisted of one-two condensed cell layers and disappeared at blood vessels entering it superficially (FIG.1). Such «spreading» of the enamel organ was explained by further proliferation of the cells of the focal thickening of the inner enamel epithelium, which partially replaced the outer enamel epithelium. Also there was some displacement of the enamel organ pulp. On serial sections we could observe that mesenchymal cells separated this considerable segment from the main mass of the enamel organ, so the latter took a smoother form (FIG.2).

Single giant dentinal papillae occurred more frequently, two or three of them in one tooth germ being rarer. The growth of three papillae was likely to result in the atrophy and death of the tooth germ. There were no such giant dentinal papillae in the control group.

Germs with short neck and two dentinal papillae of irregular size were especially deformed. The larger one, sagittally sectioned, was surrounded by a thick layer of the inner enamel epithelium (FIG.3). In other enamel organs with long epithelial neck the pulp was well-developed, while the dentinal papilla invaginated into the enamel organ through a small defect in its wall.

In the enamel organ, into which three dentinal papillae ingrew, the inner enamel epithelium was unevenly thickened, being more considerable in size on the apex of the medial one. Its cells infiltrated the enamel organ pulp and disappeared in it. Sometimes such a proliferation of the inner enamel epithelium cells occurred asymmetrically in one of its margins.

There were sharply abnormal structures that are sort of growing from the long neck of the underdeveloped enamel organ. Though the latter looked like scyphiform, the inner enamel epithelium was noted only on its one half. Extensive proliferation from the epithelial neck had a solid structure and consisted of fusiform cells. These structures are likely to be the second enamel organ on the common neck. In some abnormal tooth germs dentinal papillae ingrew into the enamel organs and partly destroyed both the outer and inner enamel epithelium. In some tooth germs the transition of the neck epithelium into the outer enamel epithelium was still evident, while the differentiation of such structures as the enamel organ pulp, inner enamel epithelium, basement

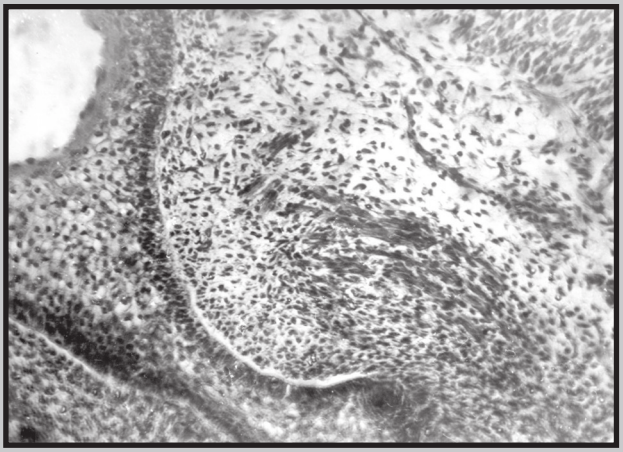

FIG.1. Thin layer of the outer enamel epithelium. Experiment 2/71. Staining with hematoxylin and eosin. x90.

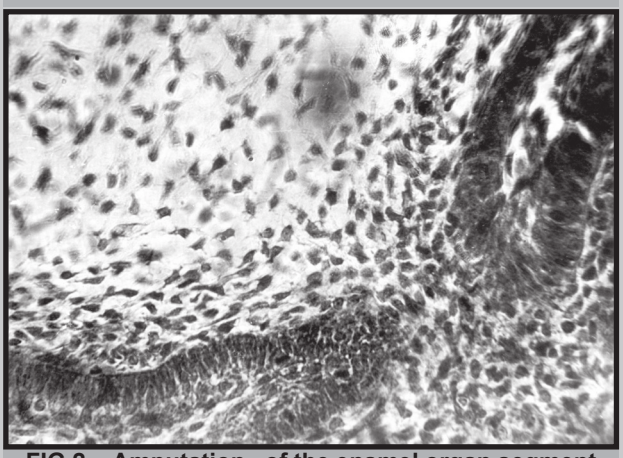

FIG.2. «Amputation» of the enamel organ segment by mesenchymal cells. Experiment 2/78. Staining with hematoxylin and eosin. x200.

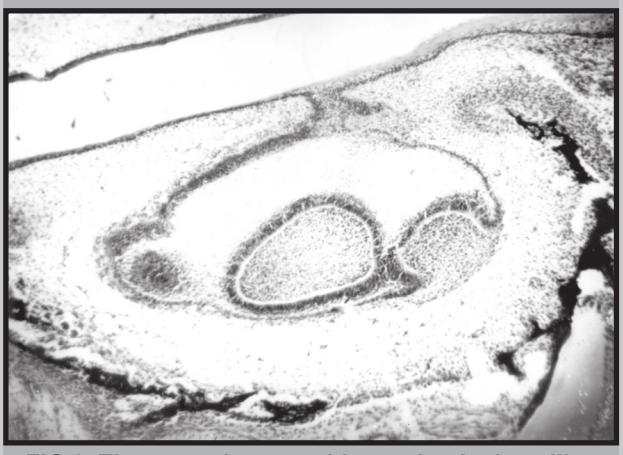

FIG.3. The enamel organ with two dentinal papillae of uneven size and thickened short neck. Experiment 2/78. Staining with hematoxylin and eosin. x90.

membrane and dentinal papilla had gone far beyond (Fig.4). Small enamel organs without clear differentiation of the enamel epithelium into the outer and inner one were present simultaneously with well-developed tooth germs.

Atrophic changes occurred simultaneously with hyperplasic processes in the same tooth germs. The enamel organ neck became thin and was infiltrated by mesenchymal cells, which, in some areas, partially destroyed the outer and inner enamel epithelium. In other areas the outer and inner enamel epithelium cells remained clearly differentiated and formed focal growths.

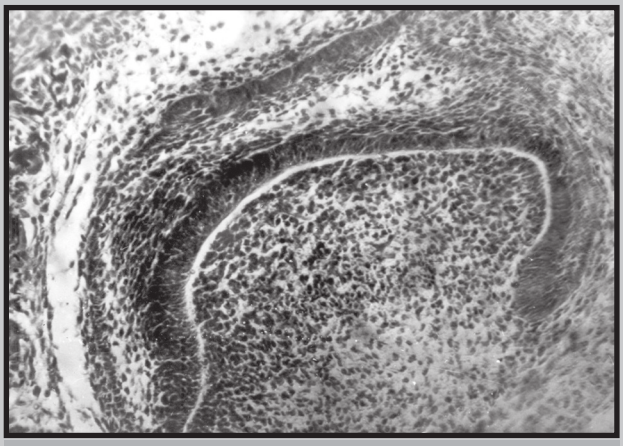

FIG.4. Neck transition of the enamel organ epithelium into the outer enamel epithelium. Large dentinal papilla. Clear-cut basement membrane. Experiment 4/47. Staining with hematoxylin and eosin. x90.

Conclusions

1. Necrotic and severe dystrophic changes of tooth germs were absent in the experimental animals.

2. During the experiment, numerous single and/or combined disturbances of shaping processes were mainly observed at the site of the neck transition into the enamel organ and in the dentinal papillae.

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