FEATURES OF THE DISTRIBUTION OF CHROMATIN-REMODELING PROTEIN ATRX IN THE NUCLEI OF MOUSE PREIMPLANTATION EMBRYOS

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Using indirect immunofluorescent staining, we studied the distribution of chromatin-remodeling protein ATRX at the initial stages of cleavage of mouse embryos. We found that a significant redistribution of ATRX protein occurs in the nucleus of blastomeres during mouse early embryogenesis. In the early zygotic stage, the diffuse pattern of ATRX distribution was predominant, then we revealed a gradual concentration of ATRX around the nucleolus precursor bodies (NPBs), as well as in heterochromatin zones that are not associated with NPBs, and the diffuse distribution of ATRX was prevalent again in the morula stage. At the all studied stages, we observed the colocalization of ATRX with heterochromatin regions intensively stained with DAPI. The colocalization of ATRX with its main functional partners, the DAXX protein and the tri-methylated histone H3 (H3K9me3), was detected in the nuclei of early embryos only in the two-cell stage, although the colocalization was not absolute. At the same time, the colocalization of ATRX with acetylated histone H4 (H4K5ac) known as an epigenetic label of active chromatin was detected in the two-cell stage. Simultaneous detection of ATRX and transcription sites by Br-UTP microinjections showed that ATRX is associated with transcriptionally inactive chromatin in the nuclei of early mouse embryos. In general, the obtained data suggest that the distribution of ATRX protein depends not only on changes in transcriptional activity of the nucleus in mouse early embryogenesis, but also on other morphogenetic processes that require further investigation.

K e y w o r d s: chromatin-remodeling protein ATRX, DAXX protein, chromatin, preimplantation mouse embryos, immunofluorescence microscopy