

При анализе ультраструктурной организации гладких миоцитов с синтетическим фенотипом выявлено, что они имеют неправильную форму, крупные округлые ядра с 1–2 ядрышками и развитый синтетический аппарат, в то время как гладкие миоциты с сократительным фенотипом имеют веретеновидную форму с вытянутым овальным ядром без ядрышек и развитым сократительным аппаратом (Thyberg et al., 1985; Kanda, Matsuda, 1994; Sweeney et al., 2006). Ультраструктурный анализ гладких миоцитов средней оболочки стенки восходящей части аорты преждевременно рожденных крыс 1-я и 2-я групп подтверждает наличие синтетически активных гладких миоцитов с малым количеством миофиламентов в позднем постнатальном периоде онтогенеза, в то время как в контрольной группе на аналогичные сроки ведущим является сократительный фенотип гладких миоцитов.

ЗАКЛЮЧЕНИЕ

В результате настоящего исследования было обнаружено большое количество гладких миоцитов с синтетическим фенотипом в средней оболочке стенки восходящей части аорты преждевременно рожденных крыс на поздних этапах постнатального периода онтогенеза, что может способствовать ремоделированию стенки сосуда и служить предиктором развития широкого круга сердечно-сосудистых заболеваний.

ФИНАНСИРОВАНИЕ РАБОТЫ

Работа выполнена при финансовой поддержке Российского научного фонда, проект № 24-25-0001.

СОБЛЮДЕНИЕ ЭТИЧЕСКИХ СТАНДАРТОВ

Содержание, питание, уход и выведение животных из эксперимента осуществляли в соответствии с Правилами проведения работ с использованием экспериментальных животных (приказ № 755 от 12.08.1987) и Закона РФ «О защите животных от жестокого обращения» от 01.01.1997. Протокол исследования (№ 8473/1 от 30.11.2020) одобрен этическим комитетом Сибирского государственного медицинского университета Минздрава России, Томск.

КОНФЛИКТ ИНТЕРЕСОВ

Авторы декларируют отсутствие конфликтов интересов.

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FEATURES OF MOLECULAR PHENOTYPE AND ULTRASTRUCTURE OF SMOOTH MUSCLE CELLS IN ASCENDING AORTA IN PREMATURE BORN RATS

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Preterm birth can contribute to the development of diseases of circulatory system in adulthood due to the incompleteness of the morphogenesis of the blood vessels wall. Smooth muscle cells are the leading cell population in the middle shell of the aortic wall and are plastic in nature, i. e. they are able to change their phenotype depending on the conditions of their environment. The presence of synthetically active smooth muscle cells in the aortic wall of an adult individual is a predictor of the formation of a wide range of cardiovascular diseases. The aim of our study is to identify the morphofunctional features of molecular phenotype and ultrastructure of smooth muscle cells of ascending aorta wall in rats born 12 and 24 hours prematurely. The paper presents the results of immunohistochemical and morphometric, as well as ultrastructural analysis of ascending aorta wall in Wistar rats born 12 and 24 hours prematurely. It has been shown that preterm birth leads to a later change in the phenotype of smooth muscle cells from synthetic to contractile, which can negatively affect the morphofunctional state of the cardiovascular system.

Keywords: aorta, preterm birth, rats, phenotype, smooth muscle cells