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INCREASED MIGRATION ABILITY OF ADENOMYOSIS-DERIVED ENDOMETRIAL MESENCHYMAL STEM CELLS

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Adenomyosis is one of the forms of endometriosis, a gynecological disease associated with abnormal functional activity of endometrial cells. Endometrial stem cells can play a key role in the pathogenesis of this disease. Despite numerous studies on cultured endometrial mesenchymal stem cells obtained from patients with adenomyosis, the information on phenotypic and functional properties of these cells remains contradictory. In this work, we performed a comparative investigation of morphological and migratory characteristics of endometrial mesenchymal stem cells isolated from the menstrual blood of healthy donors (eMSCs) and from a donor with adenomyosis (A-eMSCs). The migration of eMSCs was evaluated by “wound healing assay” using live cell microscopy. It was found that the rate of wound healing of A-eMSCs is significantly higher compared to normal cells, which indicates an increased migration potential of adenomyotic stem cells. The analysis of morphological characteristics indicated that A-eMSCs were smaller in area and perimeter compared to eMSCs, while other morphometric parameters that characterize cellular polarization did not differ. Interestingly, the incubation of eMSC and A-eMSC cells in serum-free medium influenced their migration abilities in the opposite way. Our data imply that eMSC cultures could serve as an adequate model for elucidating plasma membrane-related and intracellular mechanisms that underlie the changes in cellular mechanics, motility and invasive activity at various pathologies, including adenomyosis.

Keywords: endometrial mesenchymal stem cells, adenomyosis, endometriosis, cell motility, migration potential