CHANGES IN ACTIN LOCALIZATION AFTER ACROSOME REACTION IN HUMAN SPERMATOZOA

MAŁGORZATA KOTWICKA, MAGDALENA JENDRASZAK and JERZY B. WARCHOL
Department of Radiobiology and Cell Biology, University of Medical Sciences, Święcickiego 6, 60-781 Poznań, Poland

The acrosome reaction can be considered an exocytotic secretory process. In various cell types, actin molecules situated beneath the cell membrane are supposed to form a network preventing exocytosis. The aim of this study was to investigate changes in actin localisation in human spermatozoa before and after acrosome reaction. The material consisted of spermatozoa derived from normozoospermic men and isolated using the swim-up technique. The capacitation was performed in BM1 medium, the acrosome reaction induced by calcium ionophore A23187, and the spermatozoa were fixed in 4% (w/v) paraformaldehyde in PBS. Phalloidin-Texas-Red was used to identify polimeric and oligomeric forms of actin (F-actin). Changes in the distribution of actin both before and after acrosome reaction were checked using a confocal microscope (Zeiss). The actin localisation was different in various morphological types of spermatozoa. The actin distribution was correlated with particular membrane domains. Before the acrosome reaction F-actin was detected in the equatorial region, midpiece and principal piece, while in acrosome-reacted spermatozoa it was found in the postacrosomal domains. The results indicate an important role of the actin network in acrosome exocytosis in human spermatozoa.