Journal of Reproduction & Contraception doi: 10.7669/j.issn.1001-7844.2014.04.0227
2014 Dec.; 25(4):227-234 E-mail: randc_journal@163.com

Expression and Influence of Galectin-3 on Missed Abortion

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Objective *To explore the influence of galectin-3 on missed abortion.*

Methods *Forty cases of normal intrauterine early pregnancy were randomly divided into 2 groups: surgical abortion group (group A, n=20) and medical abortion group (group B, n=20). The third group was missed abortion group (group C, n=20) with the gestational age less than 13 weeks. Serum was isolated from the blood samples, collected and used for ELISA quantification of galectin-3. Villus and decidua tissues were collected from the abortus for immunohistochemical examination and real-time fluorescence relative quantitative PCR.*

Results *The level of galectin-3 in the serum was the lowest in missed abortion group ($P<0.05$). Immunohistochemistry showed that galectin-3 expression in villus of missed abortion group was significantly lower than that of surgical abortion group ($P<0.01$). Real-time fluorescence relative quantitative PCR showed that galectin-3 mRNA relative expression in villus of missed abortion group ($2^{-\Delta\Delta Ct}=0.04 \pm 0.01$) was significantly lower than that of surgical abortion group ($2^{-\Delta\Delta Ct}=1.00 \pm 0.00$). Galectin-3 mRNA relative expression in deciduas of medical abortion group ($2^{-\Delta\Delta Ct}=0.08 \pm 0.02$) was significantly lower than that of surgical abortion group ($2^{-\Delta\Delta Ct}=1.00 \pm 0.00$) ($P<0.01$).*

Conclusion *Galectin-3 is related to the development of villus and decidua during early pregnancy. The decreased expression of galectin-3 may promote the occurrence of missed abortion.*

Key words: galectin-3; early embryonic development; villus; decidua; missed abortion

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Galectin-3 belongs to a family of galectins. Its unique chimeric structure enables it to interact with a plethora of ligands and modulate diverse functions such as cell growth, adhesion, migration, invasion, angiogenesis, immune function, apoptosis and endocytosis, emphasizing its significance in the process of tumor progression[1]. There is increasing evidence that galectin-3 has important functions in several aspects of cancer biology, heart failure and infection, etc. But the research of its effects on embryonic development is still just initial. Therefore, this study intended to study the clinical significance of galectin-3 and the galectin-3 expression levels in serum and tissues of pregnant women.

Materials & Methods

Subjects and sample collection

Sixty early pregnant women were collected in family planning ward of our hospital from March to May in 2009. Among 60 women, 40 cases of normal intrauterine early pregnancy were randomly divided into 2 groups: surgical abortion group (group A) (n=20) and medical abortion group (group B) (n=20). The third group was missed abortion group (group C) (n=20). The inclusion criteria of three groups were voluntarily participating in the study, non willingness of natural pregnancy, menopause time<3 months, nearly half a year not taking hormone drugs, no tocolytic treatment history and having the request of termination. The women in group A and group C were given vacuum aspiration. The women in group B were given mifepristone and misoprostol. The study was approved by the institutional review board of International Peace Maternity and Child Health Hospital. Sample collection was performed with informed consent. Serum was isolated from the blood samples, collected and used for ELISA quantification of galectin-3. Villus and decidua tissues were collected from the subjects for immunohistochemical examination and real-time fluorescence relative quantitative PCR.

ELISA

The serum samples were diluted 1∶4 in sample diluent, and the galectin-3 concentration was measured with human galectin-3 ELISA kit (EIAabScience, Wuhan, China) according to the manufacturer's instructions. Three replicates were done for each sample. A standard curve ranging from 0 ng/ml to 4 ng/ml of galectin-3 was generated for the ELISA. The concentration of galectin-3 sample was determined based on the standard curve generated, by measuring the optical density of each well at 450 nm, and multiplied by the dilution factor.

Immunohistochemistry

Immunohistochemistry was performed with rabbit anti galectin-3 polyclonal antibody, unconjugated (bs-0721R, BIOS) at 1∶500 followed by conjugation to the secondary