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Dexamethasone-induced intrauterine growth restriction is associated with altered expressions of metastasis tumor antigens and cell cycle control proteins in rat placentas

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Molecular mechanisms affecting placental formation in intrauterine growth restricted (IUGR) pregnancies are not clearly understood. Since metastasis tumor antigens (MTA), MTA1 and MTA2 promote cell proliferation and MTA3 suppresses it, we hypothesized that IUGR alters cell survival/cell death programs driven by placental MTAs. To induce IUGR, pregnant Sprague-Dawley rats were given daily intra-peritoneal injections of either saline or Dexamethasone (0.4 mg/kg) starting from 14 days of gestation (dg) to either 19dg or 21dg. Gene and protein expressions of MTA1-3 in placental basal and labyrinth zones were investigated by real-time PCR, Western blotting and immunohistochemistry. We also explored the expressions of proliferating cell nuclear antigen (PCNA), caspase-3, p53, p21 and β -catenin. Dexamethasone-induced IUGR resulted in decreased expression of MTA1 in nuclei of cells in the basal zone. The expression of p21 was increased and that of PCNA was reduced in both placental zones of IUGR rats. Cytoplasmic expression of MTA1 and p53 increased in the labyrinth zone of IUGR placentas in association with an increase in cell death as indicated by an increased caspase-3 expression. The labyrinth zone of IUGR placentas showed a significant reduction in *MTA2-3* gene expression and an increase in p53 protein levels. Total MTA3 level increased and β -catenin level decreased in the labyrinth zone of IUGR placentas associated with a reduction in cell proliferation. Taken together, these results strongly suggest that dexamethasone-induced IUGR is associated with changes in MTA expression, decreased cell proliferation and increased cell death in placentas.

Biography

Mariam F Alqaryyan has completed her MSc at Kuwait University, College of Medicine. She is working as Teaching Assistant in the Departments of Physiology, Faculty of Medicine at Kuwait University, Kuwait. She is interested in endocrinology research. She has published two papers, and more are working on. She is supervising medical and MSc students.

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