Brca1 expression and trophoblast apoptosis in fetal growth restriction pregnancies

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Objectives (목적)

BRCA1, the breast and ovarian cancer susceptibility gene, is regarded as a tumor suppressor gene but regulator of cell growth and differentiation. We performed this study to know the role of BRCA1 for the regulation of cell proliferation and differentiation. Secondary we tested the hypothesis that the higher expression of BRCA1 enhanced the villous trophoblasts apoptosis, which induced placental dysfunction and finally fetal growth restriction.

Methods (연구 방법)

Placentas were obtained from women with pregnancies complicated by fetal growth restriction (n=10) and from women with uncomplicated pregnancies at different gestational ages (n=15). Placental sections were isolated and examined by means of immunohistochemistry and Western immunoblotting for identifying the expression of BRCA1 protein. The same sections were measured by hematoxylin and eosin and terminal deoxynucleotidyl transferase-mediated doxyuridine triphosphate nick end labeling (TUNEL) staining, as well as by detection of cytokeratin 18 cleavage products indicative of apoptosis.

Results (결과)

More apoptosis was found in the trophoblast layer of villi from pregnancies complicated by fetal growth restriction than from uncomplicated pregnancies. In the trophoblasts of fetal growth restricted placentas, the BRCA1 expression and the staining intensity were augmented on Western blotting and immunohistochemistry than normal placentas. There was no any remarkable difference of BRCA1 expression according to gestational ages.

Conclusions (결론)

The expression of BRCA1 and apoptosis is up-regulated in human placental villi from pregnancies complicated by fetal growth restriction. It suggests that BRCA1 may play a role in trophoblast differentiation and be related to the pathophysiologic mechanism of fetal growth restriction. So, we speculated that the clinical conditions associated with villous hypoxia lead to BRCA1-mediated apoptosis in trophoblasts and thereby contribute to placental dysfunction Yand fetal growth restriction.