Differentially Expressed Genes between Normal Placenta and Choriocarcinoma

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Gestational Trophoblastic Disease (GTD) refers to series of lesions originating from the placental trophoblasts, including hydatidiform mole, invasive mole, choriocarcinoma and placental site trophoblastic tumor. GTD is relatively more common in Asia and Africa. Choriocarcinoma is the most aggressively malignancy in GTD. The cancer cells can metastasize to lung, vagina, liver and brain. Little is known about the molecular mechanisms involved in the pathogenesis and/or progression of choriocarcinoma. To investigate the differentially expressed genes associated with choriocarcinoma, we use cDNA array to compare three cell lines, B6 cell line immortalized from normal placenta and another two choriocarcinoma cell lines, JAR and JEG-3. The result showed that in the expression level at least 27 genes were altered. Of theses genes, 5 genes were up-regulated and 22 genes were down-regulated in choriocarcinoma. TIMP3, PLAB and IGFBP3 were down-regulated and CCNB1 was up-regulated in choriocarcinoma by real time PCR assay. Immunohistochemical staining with TIMP3 antibody also showed significantly low expression in clinical samples of choriocarcinoma. Methylation was found in choriocarcinoma cell lines and tumor tissues. TIMP3 expression can be restored by 5-aza-2'-deoxycytidine in choriocarcinoma cell lines. The reduced expression of TIMP3 in choriocarcinoma may thus be due to methylation. This study shows that TIMP3 maybe a potential candidate molecular maker for diagnosis and therapy of choriocarcinoma.