Expression and Localization of Collagen Type XVI in the Developing Human Placental Villi.

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To study the expression and distribution of collagen type XVI in human placenta, paraffin embedded tissue sections (at 8, 12 and 21 weeks of gestation) fixed by periodate-lysine-paraformaldehyde (PLP) were used for immunohistochemical and in situ hybridization analysis. By immunohistochemical study using anti-type XVI antibody, large invasive (intermediate) cytotrophoblastic cells in villi were strongly stained at these all developmental stages. Smooth muscle cells of small arteries and fibrous stroma in fibrous villi were also stained at 12 and 21 weeks of gestation. However, villous trophoblastic epithelium including cytotrophoblasts and syncytiotrophoblasts were stained weakly at 8 and 12 weeks and the staining intensity of this layer was decreased at 21 weeks of gestation. By in situ hybridization using cDNA probe coding for collagen type XVI, large invasive cytotrophoblasts in the clusters of cytotrophoblastic cell columns moderately expressed collagen type XVI mRNA at these all stages. In addition, villous stromal cells and smooth muscle cells of small arteries also expressed weakly. Signals for collagen type XVI of villous trophoblastic epithelium were higher in the first trimester than in the second trimester. Localization of collagen type XVI mRNA correlated well to immunohistochemical distribution of collagen type XVI. This study indicates that both trophoblastic cells and stromal fibroblastic cells synthesize collagen type XVI, which may contribute to organize villi formation of the developing placenta.