

Localization of collagen type IV, fibronectin and elastin in the flexor digitorum tendons and in the perichondrium during prenatal development of the human hand

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Key words: hand, human, development, collagen, fibronectin, elastin

SUMMARY

The distribution of collagen type IV, fibronectin and elastin in the flexor digitorum tendons and in the perichondrium of staged human embryos and fetal hand (from 6 to 12 weeks of gestation) has been studied to analyse the immunohistochemical features of the human hand during the first trimester of pregnancy. At 6 weeks in the transverse sections of the fingers there is no evidence of the presence of collagen type IV and elastin which remain absent even in the controls of 9, 11 and 12 weeks. On the contrary from 6 weeks of intrauterine life the fibronectin is widely distributed with thickening above all in the perichondrium and in the subjacent portion of the cartilaginous model of the bone. At 9 weeks a high positivity is detected not only along the perichondrium but even into the extra-cellular matrix of every mesenchymal cell. At 11 and 12 weeks the perichondrium is always positive but a high positivity is now present along the flexor tendons and their related sheaths that show a high grade of differentiation. To sum up, the absence of the collagen type IV into the flexor and extensor tendons is understandable because it isn't a fibrillar collagen. More difficult is to understand the absence of the elastin (component of the mature tendons) until the 12th week. On the contrary the presence of the fibronectin, a structural glycoprotein, proof of active morphogenesis of mesenchymal cells, earlier in the perichondrium and cartilaginous sketch and later in the flexor tendons and their sheaths indicates that probably among the cells of mesenchymal origin the perichondrium with the cartilaginous model of the bone come before and perhaps orient the differentiation of the other components of the human hand.