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JOURNAL ARTICLE

Ultrastructural and immunohistochemical characterization of the tunica albuginea in Peyronie's disease and veno-occlusive dysfunction

V. Gentile, A. Modesti, G. La Pera, F. Vasaturo, A. Modica, G. Prigiotti, F. Di Silverio and S. Scarpa

Urology Department, University of Rome La Sapienza, Italy.

The tunica albuginea and corpus cavernosum from patients with Peyronie's disease (PD), patients with veno-occlusive dysfunction (VOD), and those from normal control subjects were studied by transmission electron microscopy and immunohistochemical staining for type I, III, and V collagens, platelet-derived growth factor (PDGF) AA and BB homodimers, and PDGF alpha and beta receptors. Ultrastructural modifications resembling a fibrotic reaction were detected in the two pathological tunica albuginea, but not in those from control subjects. Ultrastructural data demonstrated a general increase in fibrous and amorphous extracellular matrix material in the pathological tunica albuginea. The amorphous material probably represents glycoproteins and proteoglycans. The fibrous material, representing collagen, appears disorganized in the tissue and does not display the typical and homogeneous diameter, size, and spatial arrangement. Large areas of extracellular and intracytoplasmic, partially degraded, fibers are visible. An increased type I/III collagen ratio was detected by immunohistochemistry in the two pathological tunica albuginea. Moreover, a strong expression of type V collagen, correlated to fibroblasts, was revealed. Fibroblasts from control tissues, on the other hand, were totally negative. Finally, PDGF AA and BB were positive in fibroblasts from pathological tunica albuginea but were negative in control tissues. PDGF beta receptor was positive in pathological and normal tissue fibroblasts. Tunica albuginea from PD and VOD show similar ultrastructural and immunohistochemical alterations, whereas the corpus cavernosum shows no visible modifications.

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