HYPERTENSION AFFECTS SIMILARLY AORTIC AND ERECTILE TISSUE REMODELING IN SPONTANEOUSLY HYPERTENSIVE RATS

OBJECTIVES

To examine the modifications in cellular and extracellular composition (remodeling):

- Total protein
- Total collagen and collagen subtypes (Collagen I, III, V)
- Smooth muscle cell population

METHODS

In isolated aortic rings and corporal tissue samples of SHR and age-matched normotensive WKY rats

- at 6 weeks of age: pre-hypertensive state
- at 12 weeks of age
- at 24 weeks of age: well-established hypertension

RESULTS

- Total protein content
- Total collagen content increased with age in both aortic and erectile tissue
- Total protein content increased in both tissues in SHR
- Total protein content increased with age similarly in both strains while it was constant in aortic tissue

CONCLUSION

- Consistent parallel changes in the composition of erectile and aortic tissue from SHR compared to WKY
- Fibrotic degeneration of the erectile tissue, characterized by an increased accumulation of extracellular matrix proteins such as collagen III, could be a possible cause of ED due to hypertension by participating in the impairment of cavernosal relaxation and/or veno-occlusive dysfunction
- This fibrotic remodeling is often detectable sooner in the erectile tissue compared to the aortic tissue
- This model could be used to investigate innovative therapeutic strategies targeting hypertension-induced remodeling occurring both at the vascular level and at the level of a key target end-organ i.e. the penis

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