

AXONOPATHIC CHANGES OF VISCERAL NERVE ENDINGS IN URINARY BLADDER IN INTERSTITIAL CYSTITIS – AN ULTRASTRUCTURAL STUDY

Hypothesis / aims of study

The etiology of interstitial cystitis/bladder pain syndrome still remains poorly understood. A role of mast cells, a failure of protective function of urothelium as well as neurogenic causes has been considered. Furthermore, factors inducing long-term fixation of pelvic and bladder pain and urologic symptoms have remained unexplained.

The aim of our pilot study is to analyze ultrastructural morphologic changes of visceral nerve endings in the wall of urinary bladders of symptomatic patients under the long-term treatment for interstitial cystitis/bladder pain syndrome.

Study design, materials and methods

Biopsies of urinary bladder were performed in 16 patients with interstitial cystitis (according to the ESSIC Copenhagen classification of endoscopic findings: grade I (n = 5), grade II (n = 8), grade III (n = 2), grade IV (n = 1)). Specimens fixed in paraformaldehyd and semithin and ultrathin sections for electronmicroscopic examination were analyzed for ultrastructural changes of axons and myelin sheaths of nerve fibers in urinary bladder mucosa. Morphometric analyses of fibers were performed and the results were compared to the findings in six samples in control group.

Results

In 12 (75%) of the studied samples of interstitial cystitis, presence of ultrastructural morphologic changes of visceral nerve fibers - particularly signs of axonal neuropathy (accumulation of transport filaments and vesicular organelles) and signs of mild chronic demyelination in myelinated fibers were observed.

Concluding message

Based on our findings we consider that chronic neuropathic changes occur in visceral nerve endings of urinary bladder in interstitial cystitis patients. They might represent one of etiologic factors inducing the fixation of chronic pain and urologic disorders in these cases.

Specify source of funding or grant	None
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	No
This study did not require ethics committee approval because	it was not necessary
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes