GLYCOSAMINOGLYCANS IN BLADDER BIOPSIES AND IN URINE AS POSSIBLE MARKERS FOR INTESTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME

Hypothesis / aims of study
Interstitial cystitis/painful bladder syndrome (IC/PBS) is a chronic condition characterized by bladder or pelvic pain and voiding symptoms with no single definitive diagnostic test. Thus IC/PBS is considered after exclusion of other pathological situations. Since urothelial glycosaminoglycans (GAG) layer is referred as a bladder protective factor involved in this syndrome, we evaluate their metabolism in an attempt to identify changes possibly related to patients with IC/PBS.

Study design, materials and methods
Urine and tissue biopsies of four patients with IC/PBS according to NIDDK criteria were compared to four controls. Patients with IC/PBS were only under pain medication and not using any other therapy for the last six months. Women with urinary stress incontinence served as control group. After informed consent, urine and random bladder biopsies were collected during cystoscopy as part of surgery for incontinence and during cystoscopy/hydrodistension for IC/PBS patients. The expression of sulfated GAGs was investigated in tissue samples. Hyaluronic acid and sulfated glycosaminoglycans levels were evaluated in the urine of patients and controls. The methods of analysis were previously described (1,2). Histopathological analysis of the bladder tissue using hematoxylin eosin staining was also performed. Urothelial alterations were graded as present or absent. Lamina propria alterations were graded as severe moderate or mild.

Results
The histopathological analysis of IC/PBS patients showed half of them with urothelial erosion/ulcers compared to none of controls. Minimal or mild alterations in lamina propria were seen similarly in both groups. Among the different sulfated GAGs, dermatan sulfate was the most prevalent in bladder tissue of both patients and controls. There was a clear tendency to increase the expression of chondroitin and heparan sulfates in bladder tissue of patients when compared to controls. On the other hand, the sulfated GAGs in urine showed undetectable dermatan sulfate levels in both groups, and again a clear tendency to increase the levels of chondroitin and heparan sulfates in urine of patients when compared to control group. Urinary levels of hyaluronic acid were similar in IC/PBS patients and in controls.

Interpretation of results
Results indicate a tendency to increased values of chondroitin and heparan sulfates in bladder samples of IC/PBS patients. Similarly, a clear tendency to increase urinary levels of chondroitin sulfate was observed in IC/PBS patients. Chondroitin sulfate is involved in cellular proliferation and the increased urinary and bladder levels can represent a tentative of urothelium regeneration. Dermatan sulfate seems not involved in the bladder protection in cases of PBS/IC.
Concluding message

Larger number of patients will possibly give power to these findings and chondroitin sulfate can potentially represent a promising marker to better identify this syndrome.

References


Specify source of funding or grant

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Is this a clinical trial?

No

What were the subjects in the study?

HUMAN

Was this study approved by an ethics committee?

Yes

Specify Name of Ethics Committee

CAPesq no. 504-08, Clinics Hospital, University of Sao Paulo School of Medicine, Sao Paulo, Brazil

Was the Declaration of Helsinki followed?

Yes

Was informed consent obtained from the patients?

Yes