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GLYCOSAMINOGLYCANS IN BLADDER BIOPSIES AND IN URINE AS POSSIBLE MARKERS FOR INTESTITIAL CYSTITIS/PAINFULL 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 evaluated their metabolism in an attempt to identify changes possibly related to patients with IC/PBS.

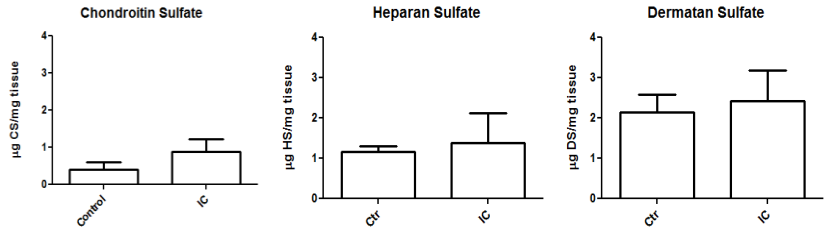
Study design, materials and methods

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.

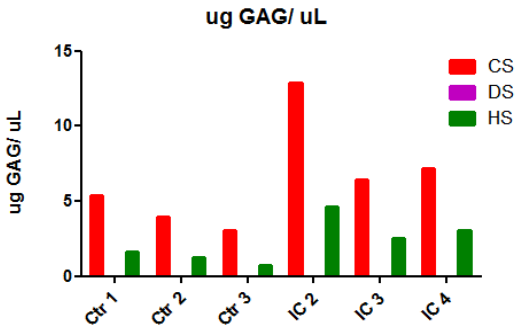
Results

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 sulfate 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.

GAGs in IC/PBS patients and controls in bladder biopsies



Urinary GAGs in IC/PBS patients and controls



Ctr: control group; IC: IC/PBS patients

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

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2. Soler R, Bruschini H, Truzzi JC, et al. Urinary glycosaminoglycans excretion and the effect of dimethyl sulfoxide in a experimental model of non-bacterial cystitis. Int Braz Urol 2008, 34: 503-511

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Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**CAPPesq 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**