INTRAVESICAL PENTOSAN POLYSULFATE ENCAPSULATED IN A LIPOSOME NANOCARRIER FOR INTERSTITIAL CYSTITIS

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INTRODUCTION: There is increasing data supporting glycosaminoglycan barrier restoration therapy for the treatment of Interstitial Cystitis (IC). Pentosan polysulfate (PP) has been used safely and extensively both orally and intravesically for glycosaminoglycan (GAG) barrier restoration therapy. Inefficient oral absorption and a hostile high proton environment with relatively rapid washout diminish the efficacy of barrier restoration therapy. In an effort to improve drug delivery, protect the GAG molecule, prolong dwell times, and enable effective urothelial absorption, high quality multi-lamellar liposomes were employed to encapsulate the PP which was instilled intravesically in a group of refractory IC patients.

CONCLUSIONS: PP appears to have efficacy in mitigating symptoms of IC when delivered intravesically to urothelium in multi-lamellar liposomes that function as a nanocarrier drug delivery system. In some cases, the positive effects lasted for months and continue. This pilot study showed a trend towards favorable results and warrants further clinical investigation. Additional studies are needed to determine the cellular effects of barrier restoration with PP in liposomes, ideal doses and intervals, safety, and cost-effectiveness of this therapy.

METHODS: This study included patients with refractory (IC) confirmed by NIDDK criteria all of which had failed either oral and/or intravesical PP therapy. All Patients received biweekly intravesical instillations of 400 mg PP homogenized at 16,000 rpm to achieve encapsulation with 150 mg of liposomes (50-200 microns). Patients received at least 4 treatments (mean 4.6) and subjective outcomes tools were obtained consisting of the O'Leary-Sant scores, visual ana-log pain scores, and Pelvic Pain Urgency Frequency scores.

OBJECTIVES: Eight subjects received a total of 37 intravesical instillations of PP encapsulated into liposomes. No adverse events were recorded in this pilot study. Several of the patents noted durable and sustained relief of symptoms for greater than 15 months. Mean Oleary-Sant scores decreased from 26.5+/- 7.2 to 13.8+/- 9.6 and mean PUF scores decreased from 24.9+/- 14.3 to 12.1+/-9.