Editorial

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Animal Model of Interstitial Cystitis/Bladder Pain Syndrome

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Interstitial cystitis/bladder pain syndrome (IC/BPS) is a chronic heterogeneous syndrome characterized by long periods of bladder, pelvic, or perineal pain, urinary frequency, nocturia, and urinary urgency [1,2]. IC/BPS seriously impairs the quality of life and is a significant burden on patients. However, most issues related to IC/BPS, including definition, incidence, etiology, and pathology, have been controversial, and its diagnosis and definition are constantly changing. There is also no known treatment for IC/BPS, and the pathophysiology of this disease is still poorly understood.

The proposed etiology includes inflammatory, autoimmune, neurotoxic, and vascular components. In addition, disappearance of the glycosaminoglycan layer from superficial urothelial cells and urinary toxicity have been proposed as pathophysiological mechanisms [3]. Because of the poor understanding of the pathophysiology of IC/BPS, there are many impediments in the development of definitive therapies; as a result, there are no standard therapies that can be used in clinical practice.

Recently, some basic studies have been performed on the therapeutic use of stem cells for IC/BPS treatment [4,5], and many *in vivo* studies are underway. For research on this topic, development of a suitable animal model that is representative of the disease manifestation in humans is essential. Over the past several decades, about 20 animal models have been developed, with characteristics similar to those of the IC phenotype [6,7]. Most animal models have been produced by injection of chemical toxins or stimulants into the bladder or by systemic injection of chemical agents, viruses, or antigens that cause inflammation of the bladder. Recent studies on IC/BPS have suggested the availability of more animal models that are designed to mimic the characteristics of IC/BPS in humans [8-11].

This review [12] noted that it is not possible to effectively characterize IC/BPS in humans using a single model, and research has recently focused on models that are widely used to reflect the characteristics of IC/BPS patients. These models are classified into 3 categories: (1) bladder-centric models, (2) models with complex mechanisms, and (3) psychological and physical stressors/natural models.

If we cannot identify the pathophysiology and course of IC/BPS, we will not be able to meet the targets of therapy. I hope to perform further research on IC/BPS through a comprehensive understanding of the animal models introduced in this review.

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