**Effect of Silodosin on Bladder Microcirculation in a Rat Bladder Outlet Obstruction Model: Evaluation Using a Pencil Lens Charge-Coupled Device Microscopy System**

**Introduction and Objective:** Impaired blood flow in the bladder is thought to be an important cause of detrusor overactivity in patients with benign prostatic hyperplasia (BPH). The effect of α1-adrenoceptor antagonists on impaired bladder blood flow has recently been a focus of investigations. We determined the effect of silodosin, a α1-adrenoceptor antagonist purely selective for the α1A-adrenoceptor subtype, on blood flow in the submucosal capillaries of the bladder (SCB) in a rat bladder outlet obstruction (BOO) model by using a pencil lens charge-coupled device microscopy system (PLCMS).
**Materials and Methods:** BOO was established in rats by partial ligature of the proximal urethra and was maintained for 2 weeks. An osmotic pump filled with silodosin or saline was inserted under the dorsal skin immediately after the BOO procedure. Silodosin (0.3 $\mu g \cdot kg^{-1} \cdot hr^{-1}$) or saline (control) was subcutaneously administered via the osmotic pump for 2 weeks. The PLCMS was used to visualize the bladder microcirculation and quantitatively assess blood flow in the SCB by measuring the velocity of the blood flow at the base and dome of the bladder. In this method, the velocity at which the red blood cells travelled through a targeted capillary vessel was measured and represented as velocity of the blood flow. The blood flow in the SCB of sham-operated rats, control BOO rats, and silodosin-treated BOO rats was compared.
**Results:** The blood flow in the SCB was significantly higher at the base compared to the dome of the bladder. The reduction in blood flow through the SCB at the base and dome of the bladder was more significant in BOO rats than in sham-operated rats. However, after pretreatment with silodosin, the BOO rats showed a significant increase in blood flow through the SCB at the base and dome of the bladder compared to control rats. The PLCMS image showed that the BOO rats had chronic ischemic capillary injury, which was ameliorated by silodosin hydrochloride.
**Conclusions:** The results of the present study suggest that silodosin protects the SCB from ischemic injury following BOO.