

IN THE RELATION OF THE ANDROGEN AND A BLADDER FUNCTION, THE ACTION ON A BLADDER BLOOD FLOW OF THE ANDROGEN IS NEGATIVE.

Hypothesis / aims of study

The reports about bladder blood flow (BBF) are also occasionally shown related to bladder outlet obstruction (BOO) model. On the other hand, there are some reports on relation between androgen and bladder function, but the relativity of androgen and BBF is not yet confirmed. So we examined the relativity of androgen and bladder function from the aspect of BBF. In this study, we examined the effect of androgen on BBF and effect on the reaction to bladder irritability after androgen deprivation using castrate male rat model.

Study design, materials and methods

1. The difference of bladder and prostate blood flow

We utilized more than 8 week-old male Wistar strain adult rats. We utilized following groups to our experiment, normal (Group A), 24h post-castration (Group B), 48h post-castration (Group C), 7 days post-castration (Group D), 12 weeks post-castration (Group E), controls of Group E (Group F) (n=8).

In order to examine the difference of blood flow by depressed androgen, measured blood flow of the bladder and prostate by the following method, after castration.

Laser Doppler method : Expose the bladder of rat under urethane (1.5-2g/ kg,i.p.) anesthesia by laparotomy. Irradiate thin NS Laser Probe (Advance Inc.) to the surface bladder and prostate utilizing balancer, measure the blood flow with Laser Doppler rheometer (ALF21RD, Advance Inc) .Measure from more than 3 points including crown piece and anterior wall and take average as observed value. Blood flow rate is shown as ml/min/100g.

2. Androgen and bladder function, examination of reaction to irritative symptoms

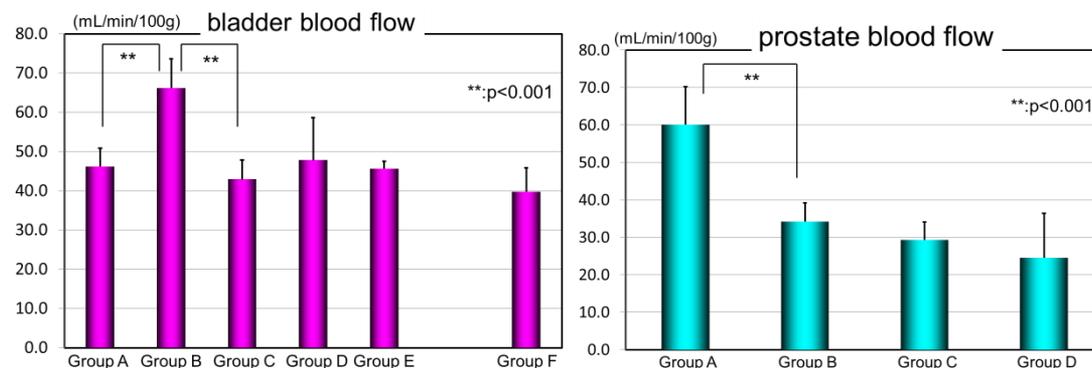
To clarify the relation between androgen deprivation and bladder hyperesthesia, we utilized Group A, B, E and F for the experiment. Bladder cystostomy was created under urethane anesthesia using polyethylene tube (PE-50 , Becton Dickinson Co.Ltd. USA) and cystometry was performed. Bladder was irrigated with saline (NS), then 0.25% acetic acid (AA) liquid solution for 1hour with the speed of 5ml/h.

As to micturition parameter, we defined as follows, maximum voiding pressure and voiding interval, showing AA/NS.

Results

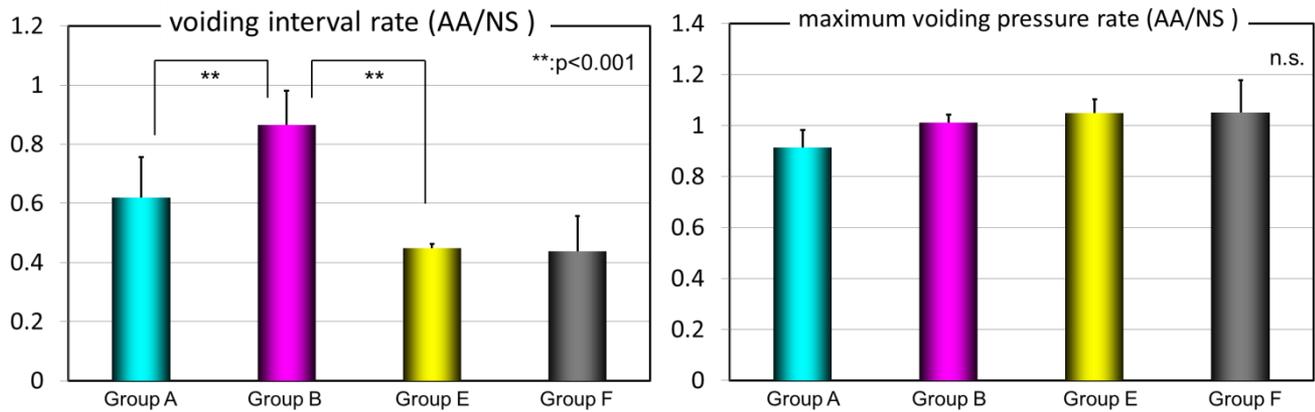
1. The difference of bladder and prostate blood flow

The BBF for each Group were 46.2±4.7, 66.2±7.4, 42.9±5.0 (mL/min/100g), respectively for Group A, B and C. Blood flow was increased on a temporary basis (p<0.001), but in the latter period there was no significant difference was recorded. On the other hand, prostate blood flow were 60.1±10.1, 34.2±5.0, 29.3±4.8 (mL/min/100g), respectively for A, B and C Group. Blood flow was decreased intentionally after castration in 24 hours (p<0.001).



2. Androgen and bladder function, examination of reaction to irritative symptoms

We utilized Group A, B, E and F. Voiding interval was shown as AA/NS and actual value for three Groups were 0.620±0.14, 0.866±0.12, 0.448±0.015 and 0.438±0.12. Voiding interval did not shorten significantly for AA stimulation in B group compare to Group A, E and F (p<0.001). Maximum voiding pressure was shown as AA/NS. There was no significant difference between the NS and AA irrigation (AA/NS) among Group A, B, E and F (0.91±0.068, 1.01±0.030, 1.05±0.054, 1.05±0.13 (cmH₂O) , respectively for 4 groups).



Interpretation of results

After castration (depression of androgen), in acute phase, BBF was increased and on bladder function, shortened voiding interval due to AA stimulation was not shown (depression of reaction due to stimulation). However, 48 hours afterward, BBF fell to the standard value, and the improvement of a bladder function was also temporary.

Concluding message

Shortly after depression of androgen, temporary BBF was increased and the possibility of affection to bladder function was implied.

It seems that the increase in BBF of shortly after depression of androgen is based on the relative increase in a BBF accompanying the blood-flow decrease of prostate, or the relative increase in estrogen accompanying an androgen decrease.

At a present stage, it seems that the action of the androgen to BBF is directly negative.

References

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Disclosures

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