Posterior Urethrogram as a Method to Study Ejaculation

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KIMURA, Y. Posterior Urethrogram as a Method to Study Ejaculation. Tohoku J. exp. Med., 1972, 106 (1), 89-91 — Erection and ejaculation were caused in male mongrel dogs by manual stimulation of the penis and the pressure changes in the posterior urethra during this stimulation were recorded. As a result, it was noted that the pressure changes in the posterior urethra from the onset of the stimulation to the end of ejaculation were identical to those seen in the posterior urethrogram reported in the previous paper, and that rhythmic alterations in the posterior urethrogram coincided with the pressure change in the posterior urethra during actual ejaculation.

Posterior urethrogram; ejaculation

It was reported in the previous paper (Kimura 1971) that the posterior urethrogram which we devised was useful in the study of ejaculation. In this report, we would like to present the evidence that the pressure alterations in the posterior urethra during sexual intercourse have the same characteristics as those in the posterior urethrogram.

METHODS AND MATERIALS

Three male mongrel dogs in the adolescence were used for this study. These animals were subjected to light anesthesia by an intravenous injection of pentobarbital and fixed in the supine position. Laparotomy was made by lower midline incision and the bladder was exposed.

A No. 6 polyethylene tube was inserted into the urethra through the internal urethral orifice via the posterior wall of the bladder and the tip of the tube was fixed in the prostatic region of the urethra. The other tip was put out of the body through the musculature of the back.

One or two days following this operation, that is, when the general conditions of the animals were fairly recovered, the penis was manually stimulated in the manner of so-called masturbation without any anesthesia, and erection, and ejaculation were caused in these animals.

On this occasion, the polyethylene tube inserted in the posterior urethra was connected to an electric manometer and the pressure changes in the posterior urethra were recorded from the onset of the stimulation to the end of ejaculation.

The method to record the pressure changes in this study was the same as those adopted in the previous paper. The recording was made by heat-writing at a speed of 1 mm/sec and the amplitude of 5 mm in the recording paper was adjusted to 10 cm H₂O.

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Fig. 1. Pressure changes in the posterior urethra during manual stimulation of the penis.

A rise of the pressure in the posterior urethra was caused by a stimulation of the penis and rhythmic alterations of the pressure, which is indicated by an arrow, occurred together with ejaculation. These suggest that the pressure changes in the posterior urethra during coitus was identical to those seen on the posterior urethrogram reported in the previous paper. Recording speed: 1 mm/sec.
RESULTS

The pressure in the posterior urethra rose gradually by manual stimulation of the penis of the experimental animals. And it was noted that when the internal pressure reached 29.0 to 45.0 cm H\textsubscript{2}O, rhythmic alterations in the pressure occurred, synchronizing with rhythmic ejections of semen from the external urethral orifice (ejaculation) (Fig. 1).

When manual stimulation was discontinued before occurrence of ejaculation, the urine obtained by a puncture of the bladder was found to contain numerous spermatozoa.

DISCUSSION

On recording posterior urethrogram, which was reported in the previous paper, a clamp was applied to the neck of the urinary bladder of the experimental animals in order to prevent the backward flow of semen into the bladder and the external urethral orifice was ligated in order to produce a resistance in the anterior urethra. The posterior urethrogram was a measurement of the pressure changes in the posterior urethra which was given above-mentioned procedure. Therefore, it was needed to prove that the posterior urethrogram actually represented physiologic states of seminal emission and ejaculation.

In the present experiment it was noted that the pressure changes in the posterior urethra induced by a manual stimulation of the penis was identical to those recorded on the posterior urethrogram reported in the previous paper, and that rhythmic alterations in the posterior urethrogram coincided with the pressure changes in the posterior urethra during actual ejaculation. These suggest that the pressure changes seen in the posterior urethrogram occur during coitus.

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Reference