CASE REPORTS

New Insights from One Case of Female Ejaculation

Alberto Rubio-Casillas, Biologist* and Emmanuele A. Jannini, MD†

*Escuela Preparatoria Regional de Autlán, Biology Laboratory, Universidad de Guadalajara, Guadalajara, México;
†Course of Endocrinology and Sexology, Department of Experimental Medicine, University of L'Aquila, Rome, Italy

DOI: 10.1111/j.1743-6109.2011.02472.x

ABSTRACT

Introduction. Although there are historical records showing its existence for over 2,000 years, the so-called female ejaculation is still a controversial phenomenon. A shared paradigm has been created that includes any fluid expulsion during sexual activities with the name of "female ejaculation."
Aim. To demonstrate that the "real" female ejaculation and the "squirting or gushing" are two different phenomena.
Methods. Biochemical studies on female fluids expelled during orgasm.
Results. In this case report, we provided new biochemical evidences demonstrating that the clear and abundant fluid that is ejected in gushes (squirting) is different from the real female ejaculation. While the first has the features of diluted urines (density: 1,001.67 ± 2.89; urea: 417.0 ± 42.88 mg/dL; creatinine: 21.37 ± 4.16 mg/dL; uric acid: 10.37 ± 1.48 mg/dL), the second is biochemically comparable to some components of male semen (prostate-specific antigen: 3.99 ± 0.60 × 103 ng/mL).
Conclusions. Female ejaculation and squirting/gushing are two different phenomena. The organs and the mechanisms that produce them are bona fide different. The real female ejaculation is the release of a very scanty, thick, and whitish fluid from the female prostate, while the squirting is the expulsion of a diluted fluid from the urinary bladder.
Rubio-Casillas A and Jannini EA. New insights from one case of female ejaculation. J Sex Med 2011;8: 3500–3504.

Key Words. Female Ejaculation; Orgasm; Vagina; Urethra

Introduction

The phenomenon of female ejaculation has been the object of a great controversy in the last decades, although there are historical data that show its existence since more than 2,000 years ago. Female ejaculation refers to the expulsion of a scanty fluid, like "watered-down, fat-free milk." Other authors described it as the expulsion of noticeable amounts of clear fluid by human females from the paraurethral ducts through and around the urethra, during or before an orgasm (see reference [1] and references therein).

It has been generally accepted that the fluid is produced in the female prostate. However, some researchers have openly expressed their doubts when large amounts of fluids are expelled, and have mentioned that that might arise from the urinary bladder. It is matter of evidence that the amount of expelled fluid varies, according to different authors, from 3–5 mL to 126 mL [1].

Why are there such great differences in these data? Is the female ejaculate a scanty or an abundant fluid? Is it a clear or a milky fluid? Are these different forms of the same fluid? Because there is still much controversy surrounding the origin of urethral expulsions, we decided to conduct further analysis to try to determine if the squirting fluid is a diluted form of urine. We supposed the existence of two different phenomena: squirting and female ejaculation. We hypothesized that the squirting fluid is a diluted form of urine, so it must contain high concentrations of uric acid, urea, and creatinine, while female ejaculate is produced by the female prostate and should contain the prostate-specific antigen (PSA) at high levels. We verified

our hypotheses in a female volunteer able to produce both fluids during vaginally activated orgasm, by measuring markers of possible anatomical sources. Furthermore, for the first time, uric acid concentration is measured in the fluid of urethral orgasmic expulsions.

Materials and Methods

Subject

A nulliparous, 43-year-old healthy, neurologically intact, volunteer was recruited. After institutional review board approval and subject's informed consent, the woman underwent physical and neurological examination (including perineal/genital inspection, vaginal, pelvic floor muscle strength, and assessment of reflexes such as anal wink, bulbocavernosus, and perineal–perianal sensation) as previously described [2]. The subject underwent a nonstructured clinical interview. Administration of the abridged Female Sexual Function Index showed absence of female sexual dysfunction [3]. The subject was exclusively heterosexual, with stable relationship, and reported at least two acts of sexual intercourse per week and a regular menstrual cycle. She has been sexually active within the past 6 months.

The examined woman was regularly able to obtain both clitoral and vaginal orgasm, as previously described [2]. All examinations have been performed during the late follicular phase of her menstrual cycle.

Before the study, a blood sample was obtained to determine glucose, uric acid, urea, and creatinine concentrations, which resulted within the normal range. Furthermore, endocrine screening showed normal levels of 17-β-estradiol, testosterone, luteinizing hormone (LH), follicle-stimulating hormone (FSH), prolactin, and thyroid-stimulating hormone (TSH) as measured in the late follicular phase (not shown).

Sample Collection

Morning urine samples to compare PSA, uric acid, urea, and creatinine concentrations have been collected (Table 1). The experiments have been replicated three times in three different, nonconsecutive cycle phases.

The subject was requested to abstain from sexual intercourse and masturbation in the 5 days prior to each experiment. During the experiments, the volunteer was in the Trendelenburg position. Sterile gloves were used to avoid bacterial contamination. A digital stimulation of the anterior vaginal wall was performed. Then, when she was properly excited, the vaginal lubricant was collected using a vaginal swab. To avoid contact with the labia minora, a sterile vaginal speculum was used. Once the sample was taken, stimulation continued until the subject reached the orgasm and urethral expulsions were separately collected. A large plastic receptacle to collect the first urethral fluid (squirting) was used. Although the ideal device to collect this fluid is a Foley catheter, the tube could compress the urethral orifice and prevent the release of the female ejaculate. The other urethral fluid (female ejaculate) was collected with a sterile tong depressor. The total volume of each fluid was measured. Furthermore, uric acid, urea, creatinine, and PSA concentrations have been determined. Specimens have been microscopically examined with an optical microscope (Carl Zeiss Optical, Inc., Chester, VA, USA).

Biochemistry

Biochemical determinations were performed using the dry chemistry technique. The device used was a Vitros 250 Chemistry System (Ortho Clinical Johnson & Johnson, Hong Kong). For PSA determination, a chemiluminescent immunometric assay was performed using the Immulite 1,000 System (Siemens Healthcare Diagnostics, Deerfield, IL, USA).

Table 1 Comparison of different biochemical parameters in the voided urine, squirting fluid, and female ejaculate

	Voided urine	Squirting	Ejaculate
PSA (ng/mL)	0.90 ± 0.03	0.23 ± 0.25*	$3.99 \pm 0.60 \times 10^{3}$*,**
Uric acid (mg/dL)	41.66 ± 3.52	10.37 ± 1.48*	—
Urea (mg/dL)	923.67 ± 82.10	417.0 ± 42.88*	—
Creatinine (mg/dL)	72.67 ± 4.04	21.37 ± 4.16*	—
Color	Yellow	Clear	White
Density	1,028.33 ± 2.89	1,001.67 ± 2.89*	—
Volume (mL)	84.00 ± 8.54	120.67 ± 56.36	0.89 ± 0.52*,**

*$P < 0.05$ vs. voided urine; **$P < 0.05$ vs. squirting.
PSA = prostate-specific antigen.
N = 3 for each determination.