WS1-5-3

Diagnostic Significance of Salivary Testosterone Measurement Revisited: Using Liquid Chromatography/Mass Spectrometry and Enzyme-linked Immunosorbent Assay

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Background & Objectives Use of saliva as a material to screen biomarkers has several advantages in the study of large research populations. Since testosterone is not bound with protein in saliva, salivary testosterone determination provides an excellent approach for the evaluation of serum bioavailable or free testosterone. Liquid chromatography/mass spectrometry (LC-MS) has been considered to be a gold standard to estimate serum total testosterone levels in male serum. Our objective was to evaluate the reliability of salivary testosterone levels measured by liquid chromatography/mass spectrometry (LC-MS). We also investigated the association of salivary testosterone measured by LC-MS and ELISA in order to evaluate the clinical application measured by ELISA. Methods The study included 51 healthy male volunteers (median age, 57 years old; range 30-85 years) and 29 patients with late-onset hypogonadism (LOH) (median age, 65 years; range, 55-78 years) in order to include a wide range of testosterone levels (median age of all subjects, 65 years; range, 30-85 years). Serum total testosterone was measured by LC-MS, and SHBG by immunoradiometric assay. Serum free testosterone and bioavailable testosterone levels were calculated by an international formula. Salivary testosterone levels were measured by LC-MS and ELISA. The institutional review board at Teikyo University approved this study and all subjects gave written informed consent. Results Salivary testosterone levels measured by LC-MS were in accordance with calculated serum free testosterone levels (r=0.655, p < 0.001, y=0.91x+27.04; x: salivary testosterone measured by LC-MS; y: calculated free testosterone). Salivary testosterone measured by LC-MS and ELISA showed a strong correlation (r=0.808, p < 0.001). Conclusion Salivary testosterone measured by LC-MS and ELISA is a noninvasive, reliable substitute for serum calculated free or bioavailable testosterone. Considering its cost advantage and technical convenience, ELISA for salivary testosterone is now recommended for the purpose of screening the androgen bioavailability level especially in a large population-based study.

WS1-5-4

Ejaculatory Dysfunction Caused by New α 1-blocker: Analysis of Human Ejaculatory Phenomenon Using Color Doppler Ultrasonography

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Introduction and Objectives To clinically analyze the mechanism of ejaculatory disorder attributable to α 1-blocker, we conducted real-time observation of the ejaculatory phenomenon of healthy males who were taking oral silodosin, a new α 1-blocker for benign prostatic hypertrophy using color Doppler ultrasonography. We have also observed the normal ejaculation and added a new insight on the conventional ejaculatory concept. Methods Three healthy males capable of normal ejaculation were used as subjects of this study. After taking 8 mg per day of silodosin for 3 days, the ejaculatory phenomenon was dynamically observed using color Doppler ultrasound. After 10-day washout period, the usual ejaculatory phenomenon was also investigated in the same manner. Results With silodosin intake, no antegrade ejaculation was observed in case 1 and 2. In case 3, ejection of a small amount of semen from the external urethral orifice was observed and inflow of a small amount of seminal fluid into the bladder was also captured. In case 1, a large amount of the seminal fluid slowly flowed into the bladder from the seminal vesicles. In case 2, only a small amount of seminal fluid inflow to the bladder was observed. Urinalysis after the experiment confirmed the sperms in each sample. Without silodosin intake, all 3 subjects demonstrated antegrade ejaculation. Immediately before ejaculation, the bladder neck flattened in association with the contraction of the prostate. Immediately afterwards, rhythmic ejection of seminal fluid from the seminal vesicles to the bulbous urethra through the ejaculatory duct was observed. Ejaculation occurred after 6-9 minutes from the start of manual stimulation of the penis, which was shorter than that observed under silodosin administration. Conclusions The ejaculatory phenomenon with administration of α 1-blocker enabled the analysis of the mechanism of ejaculatory disorder. It is intricately connected with retrograde ejaculation (retrograde inflow of seminal fluid), insufficient contraction of seminal vesicle and insufficient rhythmic contraction of pelvic floor muscles. As a result, a new insight on the normal male ejaculatory phenomenon was obtained.