



Letter

Successful intravaginal graded challenge after a systemic reaction with skin prick testing to seminal fluid

Seminal plasma hypersensitivity (SPH) reactions in women present immediately after contact with seminal fluid as either localized vaginal reactions characterized by vaginal burning, pain, and swelling or as systemic reactions characterized by diffuse urticaria, facial angioedema, dyspnea, or abdominal pain with or without localized symptoms.¹

Here, we report the first case of a 37-year old woman with SPH who experienced a systemic reaction after a skin prick test (SPT) to her spouse's fresh undiluted seminal fluid who later underwent successful intravaginal graded challenge. Our patient described a 17-year history of vaginal itching, localized urticaria, intense labial swelling, and severe gastrointestinal cramping within minutes of exposure to her partner's ejaculate after intercourse. Her symptoms varied in severity and were mild to completely absent when they used coitus interruptus or vinyl condoms, respectively. Her history was significant for 1 emergency room visit immediately after intercourse. She was not treated with epinephrine and was not prescribed self-injectable epinephrine. She reported a history of latex allergy (self-diagnosed) after 1 experience using a latex condom when she initially became sexually active and subsequently has avoided all latex-containing products. Previous SPT revealed sensitization to trees, grasses, weeds, and dust mites. She had serologic immunoglobulin E (IgE) sensitivity to cat and dog, with no history of any pet ownership. She was never tested for specific IgE to latex.

Western blotting for specific IgE binding to prostate specific antigen (PSA), the major antigen implicated in SPH, and western blot inhibition to demonstrate specificity to PSA were observed (Fig. 1).² Prior to the SPT, her husband had negative serologic evidence for hepatitis A, B, and C, human immunodeficiency virus, and syphilis. Our patient also had previous screening and was negative for chlamydia, gonorrhea, trichomoniasis, and syphilis. An SPT using the upper layer of her husband's fresh undiluted seminal fluid, liquefied undisturbed for 30 minutes at room temperature, applied to her volar arm surface demonstrated a positive wheal (4 mm × 3 mm) and flare (4 mm × 4 mm), with a positive 10 mg/mL histamine control (wheal 7 mm × 7 mm and flare 20 mm × 15 mm) and a negative saline control. Her husband was skin prick tested as a control and was negative. Twenty minutes after applying the SPT, the patient developed intense vaginal pruritis, gastrointestinal cramping, and hives over both arms and around her neck. Her blood pressure and other vital signs were within normal limits. The patient self-treated with an epinephrine auto-injector. Oral

antihistamines were also administered, and she improved after several minutes. In spite of this unanticipated reaction to seminal fluid skin testing, the patient desired and consented to have intravaginal graded challenge to seminal plasma. Treatment of SPH can be administered by either an intravaginal graded challenge or by subcutaneous desensitization using relevant fractionated seminal plasma proteins.^{3,4} Because of lower cost and convenience, it is recommended to first attempt an intravaginal graded challenge before proceeding with subcutaneous desensitization.

A fresh seminal fluid ejaculate obtained from her husband was liquefied at room temperature for 30 minutes and then centrifuged at 3,000 rpm for 25 minutes to separate spermatozoa from seminal plasma proteins. Seminal plasma concentrations of 1:1 (neat), 1:10, 1:100, 1:1,000, 1:10,000 and 1: 100,000 were prepared using standard extract diluent. Local graded challenge was performed in an outpatient clinic, beginning with a 2-mL volume of 100,000 diluent deposited intravaginally at 30-minute intervals. The patient premedicated with prednisone 20 mg and cetirizine 10 mg the night before and the morning of the graded challenge. In addition, the morning of the graded challenge, she took montelukast 10 mg. Localized itching and mild gastrointestinal cramping occurred at the 1:100,000 and 1:10,000 dilutions. Because the symptoms were mild and there were no visible changes in the vaginal vault, it was mutually decided by the patient and physician to continue with the graded challenge, and no other symptoms occurred. The patient successfully completed an open fresh seminal fluid ejaculate challenge without premedication the following day. She was instructed to have unprotected intercourse a minimum of 2 times per week to maintain tolerance. She and her husband continued having unprotected intercourse and remained symptom free after 12 weeks.

This is the first reported case of a systemic reaction to a seminal SPT to our knowledge. Previously, a systemic reaction has been reported involving a female patient after intradermal testing to her husband's semen.⁵ SPT is a safe diagnostic method, but it is not without risk. The systemic reaction rate to skin testing has been reported as 30 reactions per 100,000 SPTs in a large retrospective study.⁶ A systemic reaction resulting in fatality has also been previously reported in a female patient with asthma undergoing food skin testing.⁷

Premedication regimens are effective in reducing systemic and local reactions during accelerated aeroallergen and venom immunotherapy buildup protocols.^{8,9} No studies exist comparing the safety of seminal fluid desensitization with or without premedication regimens. When discussed with the patient, it was mutually agreed that premedication with corticosteroids, an H1 histamine antagonist, and a leukotriene receptor antagonist should be implemented before the graded challenge, which were

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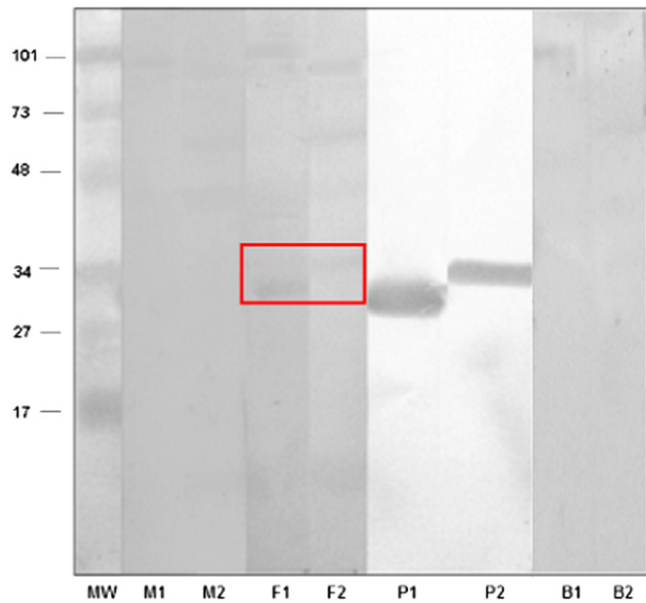


Figure 1. Nonreducing sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE; 12%) and immunoblots. Results show a dominant clear band (high-lighted in red box) of approximately 31 kDa position under a nonreducing condition (lane F1) and at approximately 34 kDa under a reducing condition (lane F2). This corresponds to PSA, as shown by the immunoblot using anti-PSA antibody in nonreducing and reducing conditions, respectively (lanes P1 and P2). Moreover, binding of the patient's IgE to these 2 bands were inhibited when her serum was preincubated with PSA (lanes B1 and B2). A few higher molecular weight minor bands were observed in the immunoblots, which might represent other minor allergens to which the patient reacted. M, male spouse; F, female subject; P, prostate specific antigen.

similar to regimens used by other investigators during rush immunotherapy.^{8,9} Localized graded challenges to seminal plasma proteins is a safe procedure, and to our knowledge, no one with systemic or localized SPH has died from a reaction or while undergoing seminal plasma desensitization or graded challenge.

This case uniquely reports a successful intravaginal graded challenge to whole seminal plasma using a premedication protocol in a patient who experienced a systemic reaction to seminal plasma by SPT.

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