

## A Case of Human Seminal Plasma Allergy Diagnosed by Prick Test Using Seminal Plasma

Dear Editor,

Human seminal plasma allergy (HSPA) is an IgE-mediated hypersensitivity reaction to proteins from prostate-specific antigen (PSA) in the seminal plasma.<sup>[1,2]</sup> Here, we report a case of HSPA, diagnosed by a prick test using seminal plasma separated from seminal fluid. A 29-year-old woman recognized repeated symptoms, such as erythema and urticaria on her entire body, that occurred after sexual intercourse with her husband. No symptoms occurred when the patient used a condom. The night before the hospital visit, she had respiratory distress and generalized wheals with itching and burning sensation after unprotected sexual intercourse with her husband. The next day, she attended the hospital, because her facial edema had not improved [Figure 1]. There was no history of recent drug intake. She had atopic dermatitis and had been treated with topical steroids. She had a dog as a pet during childhood. Blood investigations revealed no abnormal findings except specific IgE antibodies to dog epithelium (3.56 UA/mL). A skin prick test was performed using seminal plasma separated from



Figure 1: Erythema and wheals are seen on the face and ear

the seminal fluid of her husband. Since a positive control was not used in this study, a wheal of 3 mm or larger is considered positive. The result was positive for 10-fold diluted seminal plasma after 2 min. Thirty minutes later, erythema, wheals and itching appeared at all pricked sites. No response was observed in the negative control (saline) [Figure 2].

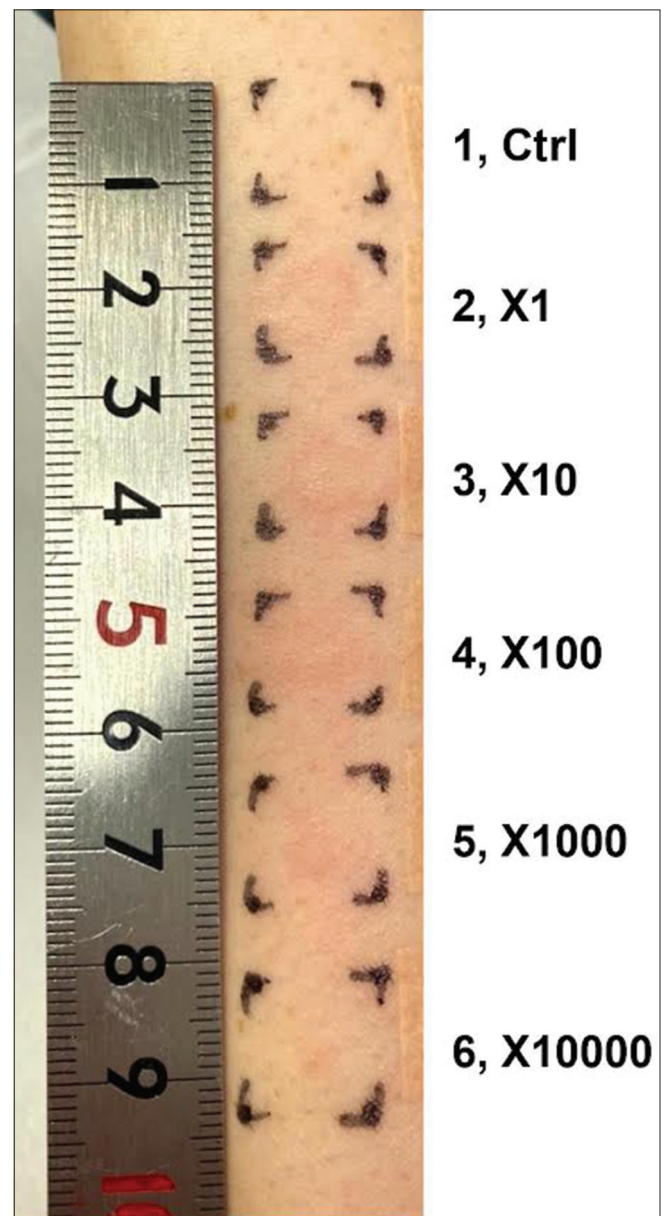


Figure 2: Prick test performed on the forearm. Seminal plasma was separated from the seminal fluid by centrifugation at 3500 rpm for 15 min at 4°C and diluted 10-10000 times with saline. The result was considered positive when the wheal diameter induced by the allergen was >5 mm. From above, 1; Control (saline solution), 2; undiluted seminal fluid, 3; 10 $\times$ , 4; 100 $\times$ , 5; 1000 $\times$ , 6; 10000  $\times$  diluted seminal fluid

The patient was diagnosed with HSPA. She was advised to use a condom during sexual intercourse and prophylactic oral antihistamines. Adrenaline auto-injectors were prescribed, to be used in the event of an anaphylactic reaction. *In vitro* fertilization was discussed because the patient wanted to become pregnant. Although HSPA is not well-recognized because of its rarity, more than 100 cases have been reported since it was first described by Specken in 1958.<sup>[3]</sup> According to a review by Presti, and a study by Shah *et al.*, the age of onset is usually between 20 and 30 years, and the disease occurs after the first vaginal ejaculation in half of the cases. It is known that HSPA becomes more severe over time.<sup>[1,4]</sup>

More than half of the patients with HSPA have an atopic background,<sup>[1]</sup> as was the case with our patient. It was previously reported that prostatic kallikrein protein (Can f 5), a major allergen extracted from dog epithelium, might be a risk factor for HSPA.<sup>[5]</sup> Can f 5 cross-reacts with PSA, with 55-60% structural homology.<sup>[5]</sup> An impaired skin barrier is thought to cause transcutaneous sensitization to Can f 5, which leads to the onset of HSPA due to cross-reactivity with human PSA. Our patient had moderate atopic dermatitis; her specific IgE antibody to dog epithelium was positive. We believe that she was sensitized to dog epithelium, considering her history of having a pet dog in her childhood.

It has been reported that 6-12 months of condom use shows improvement in clinical and skin test responses.<sup>[6]</sup> Prophylactic antihistamines may also be effective in patients with HSPA with local reactions.<sup>[7]</sup> Omalizumab, a monoclonal antibody to human IgE, was reported to be effective in a patient with HSPA.<sup>[8]</sup> Since it decreases free serum IgE and downregulates the responsiveness of FcεRβ cells, it may be effective by reducing IgE-mediated response to seminal proteins.<sup>[8]</sup>

It is difficult to conceive naturally in severe cases. According to previous reports, in mild cases where pregnancy is being planned, desensitization with intravaginal administration of diluted semen can be considered a useful treatment. However, in severe cases, artificial insemination and *in vitro* fertilization are performed.<sup>[9]</sup> Since severe allergic reactions immediately after artificial insemination have been reported,<sup>[10]</sup> artificial insemination should be performed under close monitoring.<sup>[9]</sup> In contrast, *in vitro* fertilization is safer because the patient is never exposed to semen. As the disease affects the relationship between partners as well as conception, a delay in diagnosis can cause significant stress for patients and their families. An awareness about this condition in the dermatological fraternity would enable earlier diagnosis in many cases.

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## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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