

**TABLE I.** Desensitization regimen for ciprofloxacin

| Ciprofloxacin concentration (mg/ml) | Volume given (ml) | Absolute amount (mg) | Cumulative total dose (mg) |
|-------------------------------------|-------------------|----------------------|----------------------------|
| 0.1                                 | 0.1               | 0.01                 | 0.01                       |
| 0.1                                 | 0.2               | 0.02                 | 0.03                       |
| 0.1                                 | 0.4               | 0.04                 | 0.07                       |
| 0.1                                 | 0.8               | 0.08                 | 0.15                       |
| 1                                   | 0.16              | 0.16                 | 0.31                       |
| 1                                   | 0.32              | 0.32                 | 0.63                       |
| 1                                   | 0.64              | 0.64                 | 1.27                       |
| 2                                   | 0.6               | 1.2                  | 2.47                       |
| 2                                   | 1.2               | 2.4                  | 4.87                       |
| 2                                   | 2.4               | 4.8                  | 9.67                       |
| 2                                   | 5                 | 10                   | 19.67                      |
| 2                                   | 10                | 20                   | 39.67                      |
| 2                                   | 20                | 40                   | 79.67                      |
| 2                                   | 40                | 80                   | 159.67                     |
| 2                                   | 120               | 240                  | 399.67                     |

Drug volumes below 1 ml were mixed with normal saline solution to a final volume of 3 ml and then slowly infused; the other doses were administered over 10 minutes, except the last dose (240 mg in 120 ml), which was given with an infusion pump over 20 minutes.

There is, however, a paucity of immunologic data that explain these phenomena. A type I hypersensitivity reaction is suggested by the history of previous exposure in some patients and the

reported cross-reactivity between quinolones.<sup>5</sup> However, no increase in total IgE level has been demonstrated, and specific IgE has not been detected by RAST. Dávila et al.<sup>5</sup> observed positive prick test responses to ciprofloxacin in one of their patients, but also reported positive test results in some control subjects. The possibility of direct mast cell activation, as well as other non-IgE-dependent mechanisms, must be considered.

Situations in which a quinolone is the only acceptable therapeutic option are probably uncommon. If that is the case, however, we offer this protocol as a viable option with appropriate supervision.

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## Intravaginal desensitization and successful pregnancy in a woman with seminal fluid allergy

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We report the case of a 29-year-old woman with seminal fluid allergy who was desensitized by means of the intravaginal rush method as de-

scribed by Matloff.<sup>1</sup> She conceived in a natural way a few months after desensitization and gave birth to a healthy child.

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#### CASE REPORT

A 29-year-old woman consulted us because of urticaria occurring on her hands and face after sexual intercourse, often in association with cough and dyspnea. As far as she could remember, the first symptoms had occurred immediately after marriage; they were

rather mild at the beginning but had worsened progressively. She had never had sexual intercourse before marriage and had never had other partners. The symptoms manifested as itching and swelling on the hands and face, particularly in the periorbital area, within 20 to 30 minutes after sexual contact. She never experienced perineal reactions. Direct contact of the hands with semen and scratching enhanced the clinical manifestations, but even without direct skin contact, urticaria developed on the face. The skin lesions were often accompanied by cough and dyspnea. The symptoms disappeared spontaneously after several hours but occasionally lasted for more than 24 hours. Reduction of the clinical manifestations was achieved by the preventive intake of antihistamines. The use of condoms resolved the postcoital problems completely.

The patient had a history of atopic dermatitis, asthma, and allergic contact dermatitis in response to fragrance and balsam of Peru. She had to abandon her job in a plant nursery because of hand dermatitis. We noticed that the postcoital skin lesions were localized predominantly on sites of preexisting dermatitis, probably because of a disturbed skin barrier and different reactivity.

In vitro allergy tests included IgE Pharmacia CAP (Pharmacia, Uppsala, Sweden) (517 U/ml, normal <100) and RAST with seminal fluid (1.4 kU/L, normal <0.35). The patient also had positive RAST responses to grass pollen (2.3 kU/L) and house dust mite (21.9 kU/L). RAST with latex was performed before condoms were prescribed, and the result was negative. The patient refused skin testing with her husband's semen.

Repeated attempts at intrauterine insemination with the husband's washed sperm were unsuccessful. In vitro fertilization resulted in extrauterine pregnancy, requiring laparoscopic surgery. Finally, intravaginal rush desensitization, as reported by Matloff,<sup>1</sup> was performed. Intact semen, supplied by the husband on the morning of the procedure, was used. Dilutions were made with sterile human serum albumin (0.03%) and phosphate-buffered diluent containing 1.31% 6-aminohexanoic acid, 0.04% disodium hydrogen phosphate, 0.032% sodium dihydrogen phosphate, 0.005% sodium chloride, and 0.05% phenol in water. The patient was hospitalized for cardiac and pulmonary monitoring, and an intravenous line was placed. With a syringe, 2 ml each of progressively greater concentrations of semen dilutions (1:1000, 1:100, 1:10) were deposited intravaginally at 20-minute intervals, followed by an undiluted specimen. Finally, the patient and her husband had unprotected intercourse. No allergic symptoms occurred. Desensitization was maintained by regular (twice weekly) unprotected sexual intercourse. The patient became pregnant 8 months later and gave birth to a healthy boy after a normal pregnancy.

## DISCUSSION

Since the first publication by Specken<sup>2</sup> in 1958, several cases of seminal fluid allergy have been

reported. Most of the patients are atopic. Clinical manifestations can be localized and manifest as itching and swelling of the perineal skin and vaginal mucosa, occurring 30 minutes to several hours after sexual intercourse. Systemic symptoms such as urticaria, Quincke's edema, rash, rhinitis, conjunctivitis, asthma, and anaphylactic shock have also been described.

The diagnosis of seminal fluid allergy can be confirmed by a positive prick test response to seminal fluid, as well as by RAST. Therapeutic measures include contact avoidance and the use of condoms. Preventive administration of oral antihistamines sometimes attenuates the symptoms. These measures, however, are often unacceptable for the patients and their partners. Hyposensitization has been reported by several authors,<sup>1,3,4</sup> and different protocols have been used with variable results. Although immunotherapy may be effective, most protocols require complicated preparations of the vaccine and prolonged maintenance therapy. Induction of pregnancy by artificial insemination after removal of allergenic seminal plasma proteins has been successful.<sup>5</sup> This was not the case in our patient. Several attempts at in vitro fertilization finally resulted in extrauterine pregnancy, suggesting a coexistent tubal factor responsible for her fertility problems. Intravaginal rush desensitization, as reported previously, offers a good and rather simple therapeutic alternative for patients with seminal fluid allergy. It restores sexual life and opens the possibility for conception in a natural way, as demonstrated in our patient. To our knowledge, this is the first report of a successful pregnancy in a woman with seminal fluid allergy treated with intravaginal desensitization.

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