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Late-Onset Allergic Reaction to Povidone-Iodine Resulting in Vulvar Edema and Urinary Retention

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BACKGROUND: Povidone-iodine, a surgical antiseptic, is associated with adverse side effects ranging from minor skin irritation to anaphylaxis, with symptoms occurring within minutes and up to 8 hours after contact.

CASE: We report a case of a patient, with no history of allergy to povidone-iodine, who developed an allergic reaction 24 hours after intraoperative exposure to povidone-iodine, presenting with acute urinary retention secondary to extensive vulvar edema, which resolved after administration of antihistamines.

CONCLUSION: Allergic reactions to povidone-iodine can be late in onset and, in vaginal surgeries, may present with atypical symptoms such as acute urinary retention secondary to vulvar edema. Prompt diagnosis and effective treatment requires strong clinical suspicion in patients presenting postoperatively with a known history of exposure.

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Povidone-iodine has been associated with a wide range of allergic reactions occurring from minutes to hours after exposure. We present a case in which exposure to povidone-iodine resulted in vulvar and subcutaneous edema and subsequent acute urinary retention 24 hours after exposure.

CASE

A 57-year-old woman with multiple prior pelvic surgeries to correct urinary incontinence presented for evaluation of recurrent stress urinary incontinence. Her history was significant for three vaginal deliveries, total abdominal hysterectomy, transobturator suburethral sling placement, and Marshall-Marchetti-Krantz operation. She denied any history of drug, latex, or iodine allergies. Physical examination revealed no pelvic organ prolapse and urethral hypermobility. Multichannel urodynamic testing demonstrated maximum bladder capacity of 400 mL and sensory urgency without detrusor overactivity. Leak point pressures were 50–55 cm of water with equalization and leakage indicating genuine stress urinary incontinence. The patient had a normal complex uroflow and voided to completion with appropriate electromyography changes. The patient requested definitive surgical treatment for her symptoms and subsequently underwent partial excision of prior suburethral sling, vaginal urethrolisis, placement of retropubic tension-free vaginal sling, and cystourethroscopy.

Routine perioperative technique, including general anesthesia with endotracheal intubation and preoperative intravenous antibiotics, (cefazolin) was administered. Dissection of the vaginal epithelium from the pubocervical fascia was undertaken, and a portion of the densely adherent sling was dissected off the urethra, bladder, pubocervical, and periurethral tissues and excised. A retropubic polypropylene tension-free vaginal tape was placed at the level of the mid urethra. Thorough irrigation of povidone-iodine mixed with sterile saline using a bulb syringe was used to clear the operative field and decrease contamination during placement of the synthetic graft material. The patient tolerated the procedure well with no intraoperative complications and estimated blood loss of 50 mL. The vagina was packed with iodoform. The patient was discharged home on postoperative day 1 after removal of vaginal packing and spontaneous voiding after



removal of the Foley catheter. Routine postoperative instructions were given upon discharge.

The patient returned to the emergency department approximately 24 hours after her surgery complaining of vulvar swelling, severe pain, and inability to void. She reported no difficulty in voiding upon discharge and began having severe pain and swelling approximately 5 hours before her presentation. She denied fevers or dizziness. Vitals signs were within normal limits. Edema in the mons area extending approximately 2 cm on the left lower quadrant of her abdomen was noted. No erythema, crepitus, or definite collection were appreciated; however, the area was significantly tender to palpation. Limited vaginal examination, secondary to patient discomfort, revealed extensive vulvar edema with no distinct collection or hematoma. A 16F Foley catheter was placed in the bladder and approximately 600 mL of clear yellow urine was drained, indicating acute urinary retention. Laboratory results included white blood cell count of 10,400/mL, hemoglobin of 13.6 g/dL, hematocrit of 39%, and platelet count of 198,000/mL. Computed tomography of the abdomen and pelvis showed infiltrative changes in the lower anterior pelvic wall with subcutaneous air and air in the inferior pelvic cavity (Fig. 1). The infiltrative changes extended to

the medial left thigh, subcutaneous soft tissue, and into the upper anterior pelvic subcutaneous soft tissue. No discrete collection or retroperitoneal hematoma was noted. The patient was admitted for observation and pain control. Serial complete blood counts remained stable with no evidence of active blood loss. The vulvar edema significantly improved with application of ice packs and administration of diphenhydramine intravenously and by mouth. The patient was able to void after removal of the Foley catheter and was discharged home 48 hours after her second admission. She was scheduled to have consultation with allergist as an outpatient.

COMMENT

Povidone is a synthetic polymer used as a suspending agent for many pharmaceutical products, including iodine. In this form, povidone-iodine is a commonly used antiseptic in a variety of surgical cases, providing a broad spectrum of germicidal properties against a wide range of bacteria, viruses, fungi, protozoa, and spores. Systemic absorption after topical application can potentially lead to immunoglobulin E (IgE)-mediated allergic reactions. In its most benign form, local skin pruritis and irritation occur and resolve shortly after removal of povidone-iodine from skin.¹ More severe reactions to povidone-iodine leading to anaphylaxis have also been seen in patients with an allergy to components of povidone-iodine.^{2,3} Less commonly reported are cases of angioedema immediately after contact with povidone-iodine.⁴ Regardless of the severity of symptoms, most reported reactions have developed immediately after exposure to povidone-iodine, representing the early phase of an IgE-mediated allergic reaction. Fewer cases of late-phase IgE-mediated allergic reactions have been reported with symptoms presenting 6–8 hours after exposure.^{1–3} In such cases, angioedema without concomitant anaphylaxis is even more rarely seen.⁴

Preoperative disinfection methods are used to prevent postoperative infectious complications. The microbial environment of the vagina provides a unique challenge in gynecologic surgery involving entry through or into the vagina. Although disinfecting the vagina is a universally accepted practice among gynecologic surgeons, the most effective and safest agents have yet to be determined. Comparison of povidone-iodine with agents such as saline and baby shampoo have shown comparable postoperative infectious morbidity in vaginal surgeries including vaginal hysterectomy and hysteroscopy,^{5,6} preventing infection by simply decreasing the bacterial load.⁷

Our case is unique in that the patient was undergoing vaginal surgery with subsequent placement of

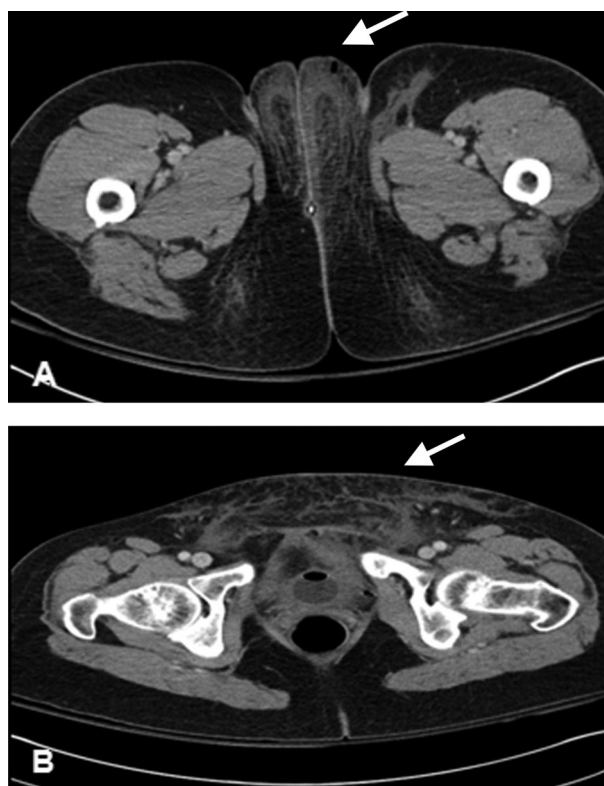


Fig. 1. Axial computed tomography scan showing subcutaneous air and infiltrative changes (white arrows) in (A) vulva and (B) lower anterior pelvic wall.

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synthetic graft material. In such cases, proper disinfection technique both preoperatively and intraoperatively is crucial in preventing both postoperative infection and ensuring long-term graft acceptance.⁸ Povidone-iodine was used for this purpose. Also unique in this case was that our patient did not have any history of allergic reaction to povidone-iodine and exhibited no immediate signs of a reaction after exposure to the agent. Her symptoms became apparent almost 24 hours after exposure to povidone-iodine in the form of subcutaneous edema. After excluding other potential causes, we concluded that irrigation of her subcutaneous tissue with povidone-iodine before placement of her suburethral sling was the most likely cause of her symptoms. Exposure to this substance resulted in the development of her localized edema and subsequent acute urinary retention, representing a delayed allergic reaction that resolved with administration of diphenhydramine. This case highlights the fact that not all immune mediate allergic reactions to povidone-iodine follow a predictable time course or symptomatology. In patients having undergone vaginal procedures presenting postoperatively with atypical symptoms, such as acute urinary retention and known exposure to povidone-iodine, strong

clinical suspicion is crucial in prompt diagnosis and treatment.

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