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A Case Report of Pseudomonas Vaginitis: A Common Pathogen in an Uncommon Place

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Abstract

Change in the homeostasis of a healthy vaginal microbiome and precipitating factors leading to the overgrowth of virulent bacteria/fungus are common causes of vulvovaginitis. The vaginal flora balance is still being studied as is the use of repopulation of depleted healthy flora using bacterial cultures. We describe a case of a 40-year patient with systemic lupus erythematous on daily prednisone and hydroxychloroquine with a history of recurrent vulvovaginitis, who received multiple rounds of antibiotics, and eventually presented with culture confirmed *Pseudomonas aeruginosa vaginitis*.

Case Description

History of Presentation: The patient is a 40-year-old woman with medical history of systemic lupus erythematous, multiple antibiotic allergies, and recent 4-5 month history of recurrent vulvovaginitis, treated with repeat doses of empiric metronidazole and recent admission with concern for primary genital herpes simplex outbreak. She was sent in from the office for concern of another episode of vulvar swelling and erythema and abnormal discharge. On the day of the office visit patient had a vaginal culture performed with the following result: "Many *Pseudomonas aeruginosa*, Along with scant normal floral."

On presentation patient was afebrile, normotensive and non-tachycardic. Physical exam was notable for bilateral labia majora and minor erythema, diffuse thin viscous yellow-green discharge, no areas of fluctuance, no herpetic lesions or erosions noted.

Past Medical History: The patient's medical history included system lupus erythematous, lupus nephritis class V, hypertension, iron deficiency anemia. Patient allergies naproxen, ibuprofen, ciprofloxacin (rash/hives), bactrim (rash/hives), ampicillin (rash/hives), penicillin (rash/hives), clindamycin (rash/hives).

Management: Patient was started on IV cefepime q8 hours for a total of 10 days. She previously had documented history of no cross-reactivity to cephalosporins given history of ampicillin and penicillin allergies. Given history of previous primary genital herpes outbreak, patient was continued on home medication of acyclovir 400 mg bid. As per patient, she did not tolerate Valtrex well. She was continued on home immunosuppressants including prednisone 7.5 mg daily and hydroxychloroquine.

Discussion

Dysbiosis of the healthy vaginal microbiome is a growing area of investigation in the field of gynecology. Vaginitis is a common complaint of patients in both the outpatient and emergency room and is estimated to be responsible for 10 million office visits annually [1]. The global prevalence of vaginitis ranges from 15-39% and may remain undiagnosed in 7-72% of patients [2-3]. Our patient presented with vaginitis from *Pseudomonas aeruginosa*, which although species of this bacteria have been cultured from vaginal flora, it is not a common pathogen associated with a healthy vaginal microbiome [4]. Furthermore, her repeated history of vaginitis symptoms and treatment with multiple courses of Metronidazole likely disrupted her protective Lactobacillus species, therefore her culture noting "scant normal flora".

In addition to depletion of her healthy microbiome, our patient likely had a component of depressed cell mediated immunity given her long-term use of oral prednisone, albeit low dose [5]. *Pseudomonas aeruginosa* is traditionally associated with severe neutropenia and loss of mucosal integrity, such as severe infected burns. Proposed mechanisms of Pseudomonas spp. infection include biofilm production and use of Quorum sensing in maintaining extracellular components of the biofilm matrix [6]. In in vivo studies Lactobacillus species have been shown to also produce biofilms, that have been postulated to be protective against biofilms produced by more virulent species such as Gardnerella and Pseudomonas [7,8].

Conclusion

Our case represents the importance of identifying patients who not only present with recurrent vulvovaginitis but who are also at risk of this disease process. Appropriate diagnostic evaluation and pathogen testing, including sensitivities to antibiotics/antifungals becomes increasing important in these patients so as not to breed resistance strains of pathogens. Furthermore, it is important to recognize that patients who present with recurrent vulvovaginitis may have other risk factors that make them more susceptible to dysbiosis of their healthy vaginal microbiome.

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