

Dopaminergic Drugs for the Treatment of Recurrent Persistent Bacterial Vaginosis: A Case Report

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Abstract

Bacterial vaginosis (BV) frequently presents with a malodorous vaginal discharge. The only approved treatments are antibiotics either vaginally or orally e.g., metronidazole or vaginal clindamycin. Unfortunately, despite antibiotics or other treatments the condition tends to be persistent or recurrent. The etiology is not known for sure especially as to why the normal predominant vaginal flora are replaced by minority bacteria that cause the symptoms. Many conditions, including, but not limited to, pelvic pain that have been resistant to standard therapy will show marked amelioration following treatment with dopaminergic drugs especially dextroamphetamine. A 40-year-old woman had been treated for BV. The improvement would be the transient and she had frequent recurrence. She was treated with dextroamphetamine for orthostatic edema and weight gain. She noted that since starting the dextroamphetamine, the BV never returned over several years of treatment except a couple times when she was unable to obtain dextroamphetamine. Dopaminergic drugs have been found to completely eradicate long term vulvovaginitis which we attributed to its effect of decreasing cellular permeability preventing irritants from infusing into vaginal tissue causing inflammation and pain. Thus, we hypothesize that the change in bacterial flora causing BV is in some way related also to increased cellular permeability allowing colonization of minority bacteria to become the predominant microorganism thus leading to BV. A larger clinical trial should be initiated to determine if dopaminergic drugs may be a very effective treatment for this condition that is usually recalcitrant to antibiotic treatment.

Keywords: bacterial vaginosis; increased cellular permeability; dopamine; amphetamines

Introduction

Bacterial vaginosis (BV) is the most common cause of an abnormal malodorous vaginal discharge [1-3]. It is generally associated with a change in the vaginal bacterial flora with a significant decrease in protective Lactobacillus species with replacement with bacteria that are intrinsic to the vagina. Thus, these bacteria are not considered as pathogenic, but, even so, they produce the symptoms of discharge, odor, and pruritus related to the overgrowth of these normal, but usually minority, inhabitants. These bacteria include Gardnerella vaginalis, Ureaplasma urealyticum, Mycoplasma hominis, Prevotella species, Mobiluncus species, Atopobium vaginae, and other gram-positive and gram-negative anaerobic microorganisms [4-7].

Frequently, BV persists despite treatment. Even if the symptoms abate for a period of time, it tends to recur [8,9]. There are conflicting studies as to whether recurrent BV is related to re-infection or simple relapse. The theory favored by our group is that the cause of relapse is the inability to re-establish Lactobacillus as the main colonizing organism of the vagina for whatever reason [4].

Though the recommended treatment of BV includes oral or intravaginal metronidazole, or intravaginal clindamycin, which are effective for short-term relief of symptoms, unfortunately within 6-12 months of finishing antibiotics, 50-80% of women will have a BV recurrence [10-13]. The review by Abbe and Mitchell presents other treatment options including probiotics, vaginal microbiome transplantation, biofilm disruptors, cessation of smoking, the use of oral contraceptives or progestin only contraceptives, and premenstrual syndrome special diets, [6]. These measures have had limited success, at best, and thus the only FDA approved treatment is antibiotic therapy.

The following case report introduces a potential novel therapy to prevent recurrent BV and that is the use of the dopaminergic drug dextroamphetamine sulfate.

Case Report

A 40-year-old woman was seeking help for irregular menstrual cycles and weight gain. She also complained that associated with the irregular cycles

she started having recurrent episodes of bacterial vaginosis confirmed by demonstration of clue cells on vaginal cytology and positive culture for *Gardnerella vaginalis*. She had repeated courses of oral metronidazole 500mg, twice daily for 7 days but they still seemed to recur at least once per month. The problem had persisted for 4 years.

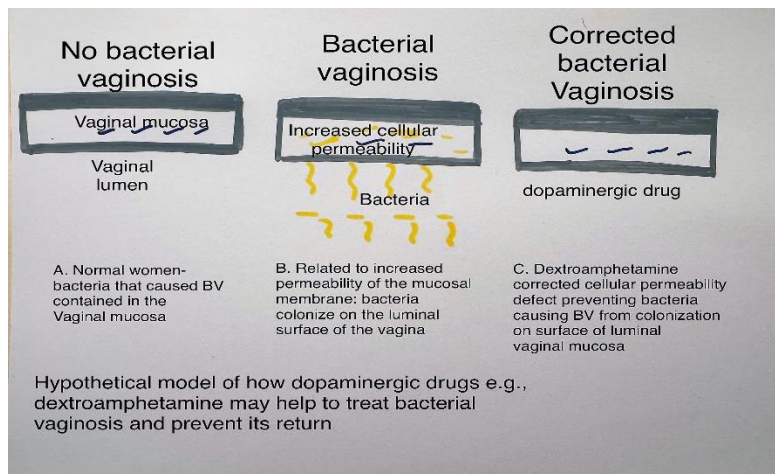
Related to weight gain despite caloric restriction, and with the physical presence of a brawny type edema in her legs, we started her on dextroamphetamine sulfate, eventually increasing the dosage to 18.8mg AM and noon [14,15]. She did lose 20 pounds while increasing her caloric intake. However, she noticed that while taking the medication over the 6-year time span of treatment she had not had any episodes of BV. The exception was a recurrence twice when she could not obtain the medication because of a pharmaceutical shortage.

Discussion

Dopaminergic drugs have been reported to markedly improve vaginal and pelvic maladies that were previously refractory to conventional therapy. These conditions include dysmenorrhea, pre-menstrual pain, mittelschmerz, dyspareunia, vulvovaginitis, pain penetration disorder, chronic pelvic pain, and pelvic pain of bladder origin [16-27].

Dopaminergic drugs e.g., dextroamphetamine sulfate, have also been used to correct infertility and recurrent miscarriage [28-29]. The theory of the mechanism of why dopaminergic agents not only help pelvic pathological entities, but also a large number of other chronic refractory medical conditions, is related to the effect of dopamine in diminishing cellular permeability [30-31]. The theory holds that related to various factors including genetics, infection, or trauma, certain tissues lose their ability to block irritants or pathogenic microorganisms from infiltrating certain tissues or organs leading to inflammation and pain or physiological dysfunction of an organ system [30-33].

The hypothetical mechanism involved in this case of the dopaminergic drug dextroamphetamine preventing recurrent BV is that an acquired defect in tissue permeability of the vaginal mucosa allows the infiltration of the microorganisms responsible for BV (in this case *Gardnerella vaginalis*) to surface and then proliferate causing discharge, odor, and pruritus. Dextroamphetamine by releasing dopamine from sympathetic nerve fibers corrected the permeability defect leading to correction of the BV as seen in **Figure 1**.



Conclusion

Hopefully this case report will generate interest in other gynecologists to evaluate dopaminergic drugs for BV in a larger population. As reproductive endocrinologists we do not have a large population of women with this particular complaint. Though dextroamphetamine sulfate is very well tolerated, and in the lower dosages used to treat pelvic and other disorders it is non-addicting, for some reason it has been placed in the same category as drugs e.g., fentanyl and oxycontin thus making some physicians uncomfortable in prescribing amphetamines. The dopaminergic drug cabergoline has also been found to effectively alleviate the symptoms of pelvic pain and other medical conditions that had been refractory to conventional therapy [25,34]. It would be interesting, therefore, to also try treating cases of BV with cabergoline to see if this drug is also effective.

A search of literature failed to find any published manuscripts refuting the beneficial effects of dopaminergic drugs for BV. Other pelvic disorders or other health conditions. We did find one very old publication supporting the concept of using dopaminergic drugs for vulvodynia only in this case the dopaminergic drug was levodopa which was given to treat women with Parkinson's disease also significantly improved associated vulvodynia [35].

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