

Cytolytic vaginosis: A review

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INTRODUCTION

Vaginal discharge is one among the common diseases encountered in women. Trichomoniasis, bacterial vaginosis, and yeast infections are the three most frequent causes of vaginal discharge.^[1] In some of the patients who have symptoms and signs of vaginal candidiasis, which is unresponsive to antifungal drugs, a diagnosis of cytolytic vaginosis may have to be suspected.^[2]

Cytolytic vaginosis is also known as lactobacillus overgrowth syndrome or Doderlein's cytolysis. It is characterized by abundant growth of *Lactobacilli* resulting in lysis of vaginal epithelial cells; and therefore, it is called as cytolytic vaginosis.^[3]

LACTOBACILLI IN THE VAGINA

Doderlein, first described the normal vaginal flora as, consisting of predominantly of the acid producing gram-positive rods, now referred as lactobacillus species. Healthy women of reproductive age groups are usually colonized by *Lactobacillus* and *Gardnerella vaginalis*. It is also suggested that the presence of oestrogen and lactobacillus are needed to achieve an optimal vagina pH of 4.0–4.5%. *Lactobacilli* produce lactic acid from glucose, keeping the vagina at an acidic pH. After puberty under the influence of oestrogen, glycogen is deposited in the vaginal epithelial cells, which is metabolized by vaginal epithelial cells to glucose. Lactobacillus converts glucose to lactic acid.^[2,4]

Some species of *Lactobacilli* also produce hydrogen peroxide (H₂O₂), which is toxic to various microorganisms. This may prevent overgrowth of organisms such as *E. coli*, *Candida* species,

Gardnerella vaginalis and *Mobilincus* species. It has also been suggested that H₂O₂ positive strains of *Lactobacilli* may also protect against human immunodeficiency virus (HIV) infection. The protective role of various other antimicrobial products such as lactacin B and lactocidin are not clearly established. According to several studies, *Lactobacilli* builds up a barrier against candidal overgrowth by blocking the adhesion of yeast to vaginal epithelial cells through competition for nutrients.^[4]

PATHOGENESIS OF CYTOLYTIC VAGINOSIS

Normal vaginal flora in adult women within the reproductive age group usually consists of *Lactobacilli*. Further, *Lactobacilli* in low numbers (five bacilli per ten squamous cells) in vaginal discharges have been considered as protective factors against vaginal candidiasis.^[5] As mentioned earlier, *Lactobacilli* builds up a barrier against candidal overgrowth by blocking the adhesion of candidal yeast cells to vaginal epithelial cells, through competition for nutrients. Sometimes, a few individuals within the reproductive age group may have overgrowth of *Lactobacilli*. In these patients, *Lactobacilli* alone or in combination with other bacteria, may cause damage to the vaginal intermediate epithelium that may result in dissolution of the cells. This dissolution causes dysuria in individuals with cytolytic vaginosis.^[6] These individuals are misdiagnosed as candidiasis and do not respond to repeated antifungal therapy regimens for suspected recurrent vulvovaginal candidiasis. Patients who have diabetes mellitus may also develop cytolytic vaginosis as it has been

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claimed that the *Lactobacilli* are more abundant in women with high serum glucose levels. It has also been observed that symptoms will be more during luteal phase and it has been suggested that in the luteal phase there is remarkable rise in the number of colonizing *Lactobacilli*.^[3]

CLINICAL FEATURES AND DIAGNOSIS

Cytolytic vaginosis is characterized by pruritus, dyspareunia, and vulval dysuria. Cyclical increase in symptoms is more pronounced during luteal phase.^[6] Cerikeoglu *et al.*, in their study of 210 women with vaginal discharge and other symptom/signs of genital pathology, suggestive of vulvovaginal candidiasis, observed that fifteen patients (7.1%) were diagnosed with cytolytic vaginosis. All of these cases were in the reproductive age groups of 25–40 years. Five were in the luteal phase, with enhanced complaints of discharge and pruritus.^[3] In yet another study, the number of patients diagnosed with cytolytic vaginosis was defined as only five in 101 women with abundant vaginal discharge.^[7] In one more study of 271 patients with vulvovaginal complaints, 29 (10.7%) were diagnosed as having suggestive vulvovaginal candidiasis, but only 16 (5.9%) had a confirmed diagnosis of candidiasis.^[8] Although not mentioned in the article, remaining cases could have been diagnosed as cytolytic vaginosis, if further investigations were carried out.

The signs and symptoms were similar to vulvovaginal candidiasis. While vulvovaginal candidiasis was accepted as an important genital disorder comprising 10-30% of all vulvovaginal pathologies with discharge, cytolytic vaginosis was seen in a proportion of 5-7% in the same patient population and considered as a significant clinical condition.^[2]

As the signs and symptoms of cytolytic vaginosis mimic vulvovaginal candidiasis, it is important to exclude vulvovaginal candidiasis by investigations. A pH of 4.0-4.5 was detected in patients with cytolytic vaginosis. On Gram's stain, leucocytes were not observed unlike in those with candidiasis. Typical candidial yeast cells were also not found.^[2,6] Abundant *Lactobacilli* covering the fragmented epithelial cells may be confused with the "clue cells" of bacterial vaginosis, these are therefore called as "false clue cells".^[9] Usually there is no confusion between bacterial vaginosis and cytolytic vaginosis. Bacterial vaginosis may be diagnosed by pH measurements and whiff tests. Cytolytic vaginosis patients have an acidic pH of 3.5-4.5 where as in bacterial vaginosis have a pH of more than 4.5.

All cases of cytolytic vaginosis will have negative culture results in sabourand dextrose agar (SDA).^[3]

Following diagnostic criteria have been suggested for cytolytic vaginosis:^[6]

- High risk of suspicion,
- The absence of *Trichomonas*, *Gardnerella* or *Candida* on wet smear.
- An increase in number of *Lactobacilli*.
- A paucity of white blood cells.
- Evidence of cytolysis.
- The presence of discharge.
- pH between 3.5-4.5.

TREATMENT

After a correct diagnosis, the treatment is directed towards reducing the number of *Lactobacilli* by elevating the vaginal pH. Treatment involves douching with sodium bicarbonate solution or using a sodium bicarbonate suppository vaginally. Douches are carried out twice weekly for every two weeks. Solution for douches can be prepared by mixing 1–2 table spoons of baking soda with four cups of warm water. Alternatively, empty gelatin capsules are filled using baking soda and one capsule is inserted intravaginally, twice weekly for every two weeks. These measures help in resolving the symptoms by restoring the normal vaginal environment. If the symptom persists or worsen beyond 2–3 weeks after initiating treatment, re-evaluation is required.^[2,6,10]

CONCLUSION

Thus, any women having an undiagnosed vaginal discharge, the diagnosis of cytolytic vaginosis should be considered as a possible culprit. It is not as common as bacterial vaginosis or candidiasis, but is sometimes confused with them especially with the latter. A misdiagnosis can lead to the patient's suffering and unnecessary medication for other causes of vaginal discharge.

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