



**ORIGINAL RESEARCH PAPER**

**Gynaecology**

**Vulvovaginal candidiasis: Since Antiquity till Today...**

**KEY WORDS:**  
Vulvovaginal Candidiasis, Vaginitis, Pruritis Vulvae, Alternative Therapy

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**ABSTRACT**  
Vulvovaginal candidiasis is the second most common causes of vaginitis accounting for 35% to 40% of the vaginal infections. The ancient physicians have well documented the vulvovaginal infections. In 1850 BC Kahun Papyrus c. mentioned the itching of vulva. Egyptians (600-1200 BC) also mentioned about genital infections. First recorded reference to thrush infection (yeast on mucous membrane) was made in 400 BC by Hippocrates. He described it as white patches associated with debilitating illness. With course of time vulvovaginal candidiasis has evolved from being considered a “nuisance infection” to a clinically relevant condition. Still there is lack of representative data on the epidemiologic features of laboratory-confirmed vulvovaginal candidiasis. Recurrent vulvovaginal candidiasis causes a great deal of discomfort, inconvenience and sometimes has psychological sequelae.

**INTRODUCTION**

Candidal vulvovaginitis the most common gynaecological infections seen in women attending OPDs in their reproductive age. It is reported that 70% of women had candidal vulvovaginitis at some point in their life span. It is caused by inflammatory changes in the vaginal and vulvar epithelium resulting to infection with Candida species, most frequently with Candida albicans. In Reproductive aged women (i.e in between menarche to menopause) Candida is a part of normal flora of vagina and it is asymptomatic until becomes pathogenic.<sup>2</sup> Candida becomes pathogenic when excess of glycogen has not been converted to lactic acid by lactobacilli in vaginal pH.<sup>3</sup> Vulvovaginal candidiasis (VVC) is associated with irritation, itching over vulva n vagina, dysuria or inflammation.<sup>2</sup> Several behavioural such as frequent sexual intercourse, oral sex, use of high oestrogen oral contraceptives, condoms, spermicides and host-related risk factors such as antibiotics use, uncontrolled diabetes, conditions with high reproductive hormone levels, genetic predisposition etc. have been associated with VVC and recurrent episodes.<sup>4</sup> It has been considered an important worldwide public health concern because the disease strikes millions of women annually.<sup>5</sup> In the United States, prior to the availability of over the counter (OTC) treatment approximately 13 million cases of VVC annually accounted for 10 million visits to the gynaecologists.<sup>4,6</sup> Studies have found that women with recurrent vulvovaginal candidiasis (RVCC) are more likely to experiment with alternative therapies due to relatively lower cost. An estimated 42% of patients with RVCC have resorted to alternative therapies.<sup>6</sup> Studies are also being conducted on the prospects for development of vaccine to prevent and control vaginal candidiasis.<sup>7</sup> The phenomenon of drug resistance has raised interest in substances of natural origin as a therapeutic alternative.<sup>8</sup> There are a number of other non-conventional methods available but these have not been assessed in well designed randomized clinical trial.<sup>9</sup> Studies have confirmed the antifungal potential of garlic and neem against drug resistant Candida isolates.<sup>10</sup> The most commonly cited alternative therapies in a literature review were yogurt containing acidophilus, boric acid tablets, garlic and teatree oil.<sup>6</sup>

**HISTORICAL BACKGROUND**

**Egypt medicine (6000-1200BC):**

The ancient Egyptians were aware of genital infections and the Kahun Papyrus c. 1850 BC mentioned itching of the vulva. Women's diseases were adequately represented in Papyri. There are references to vulval pruritus, for which oil and incense or asses' urine was applied. A word 'schememet' that conveys the idea of 'hot thing' and can be translated as inflammation was used several times in the Smith Papyrus, a scroll written about 1550-

1700BC. The Hearst Papyrus referred to genital urinary disease in women and consists of 204 sections. The Ebers Papyrus c. 1550 BC had several sections devoted to disease of the female genitalia. Remedies were prescribed for pustular eruptions of the vulva and to disperse inflammation of those parts. Garlic and the powdered horn of cow in solution were used to protect against vaginal diseases. In case of inflammation the irrigating fluid was altered to bile of a cow, cassia and oil. Peppermint water was being used for vaginal douching. Remedies for pruritus were also mentioned. Pessaries made from lint impregnated with various drugs rolled into torod-shape, and applied to the vagina.<sup>11</sup>

**Greek medicine (500-300BC):**

Hippocrates (460-377 BC) described white patches associated with debilitating illness. It was the first recorded reference to thrush infection (yeast on mucous membrane) made in 400 BC.<sup>12</sup> During Hippocrates lifetime speculum uteri or microscope was used for observation of the vagina and cervix. In Greek medicine inflammation was called as 'phlegmone' which meant 'the burning thing'. Galen (AD 131-201) has used the term 'theriac' for inflammation. In 1665 Robert Hooke first described a fungus by microscopy. There is a description possibly of thrush infection in one of Samuel Peyp's diaries of 1660-1669.<sup>11</sup> Vaginal candidiasis has been recognized at least since 1792, when Frank observed it developing simultaneously along with apthous ulcer of the mouth.<sup>13</sup> Fungi from the vagina was first isolated in 1849 by Wilkinson.<sup>11,12,13</sup> In 1875 Haussman showed that fungal spores occurred in the mouth of babies whose mothers had vaginal thrush and he demonstrated that the same fungus Oidium albicans caused disease in both. Pregnancy is known to predispose to the disease but it occurs in woman of all ages and has been described in virgins by Mettenheimer in 1880. Castellani and Taylor (1925) stated that Monilia (C. albicans) is found neither in smears nor in cultures of normal vaginal secretion. Davis in 1929 showed that it is not infrequent after the menopause.<sup>13</sup> Mycotic vulvovaginitis was first described by Plass and colleagues in 1931.<sup>11,12,13</sup> In 1950 Brunsting stated that the disease may be extremely persistent lasting for more than twenty years.<sup>13</sup> Candida was officially accepted as the genus name for Monilia albicans in 1954.<sup>12</sup> Vayssiere et al. in 1958 described that it is often exacerbated about the time of menstruation, and growth of Candida is more marked at the end of menstrual cycle. Hurley et al. in 1973 described the incidence and distribution of these species in the vagina. And the pathogenicity was reviewed by Hurley (1967).<sup>13</sup> In 1971 Kudelko suggested a possible link of RVCC to allergy.<sup>14</sup> Carollet al. in 1973 showed that the isolation of C. albicans coincide with vaginitis and concluded that C. albicans is not a part of the normal flora and its presence indicate morbidity. In 1990, the first topical

treatment for VVC was approved by the Food and Drug Administration for over the counter use.<sup>4,6</sup>

**Epidemiology**

Candida vaginitis is prevalent throughout the world.<sup>15</sup> It is the second most common vaginal infection,<sup>16</sup> accounting for about 35-40%.<sup>16,17</sup> The incidence has doubled over past 20 years.<sup>18</sup> VVC is the first cause of vulvovaginitis in Europe and second in USA and Brazil.<sup>5</sup> Exact incidence of VVC is difficult to estimate because of non reporting, diagnosis is usually made without any confirmatory test and many of the patients take over the counter medication for treatment.<sup>4</sup> Only two studies have been conducted in India in a community based sample, in which laboratory confirmed VVC was diagnosed. Bang et al. diagnosed VVC in 35% of 650 adult women living in rural Maharashtra. Prasad et al. diagnosed VVC in 10% of 451 married (16-22 year) women, in rural Tamilnadu.<sup>19</sup> It is estimated that around 75% of women will have at least one episode of vulvovaginal candidiasis.<sup>1,5,9,16,20</sup> Approximately half of them experience more than one episode<sup>4,5,21</sup> and nearly 5% experience a relapse and recurrence during a period of many years.<sup>5,9,20,21</sup> Approximately 10-20% of women will have complicated VVC.<sup>21</sup> Up to 10% women do not have obvious predisposing factors and yet suffer with recurrent infection.<sup>15</sup> Point-prevalence studies indicate that Candida spp. mostly C. albicans may be isolated from the genital tract of approximately 20-30% of asymptomatic healthy women of child bearing age and in up to 70% if followed longitudinally over a year. An increased incidence of VVC was found in African-American compared to white American women in two different population based studies.<sup>4</sup>

**Incidence among pregnant women**

The incidence of vaginal candidiasis is almost double during pregnancy, particularly in second and third trimester.<sup>22</sup> In asymptomatic pregnant women the Candida colonization rate can be 30-40%.<sup>23</sup> One of the study conducted in Nigeria observed high prevalence (70%) of vaginal candidiasis among pregnant women, of which 59.5% were multigravida and 40.5% were primigravida. In second trimester highest occurrence (61%) of Candida was found followed by third trimester (21.4%) and first trimester (16.7%) respectively.<sup>22</sup>

**Distribution of Candida species in VVC**

Vulvovaginal candidiasis is caused by an overgrowth of Candida albicans in 80-90% of women<sup>20,23,24,25,26</sup> and other yeast accounts for up to 20% of cases. Over the past two decades relative incidence of vaginitis caused by fungi other than C. albicans is increasing. Candida glabrata accounts for about 10% of vaginal yeast isolates. Candida tropicalis is isolated from about 1-5% and may be associated with a higher rate of recurrence after standard treatment.<sup>17,20,26</sup> Non albicans infections are associated with recurrent disease and with HIV infection.<sup>4,26</sup> Candida glabrata is said to be responsible for up to 33% of recurrent cases of VVC.<sup>9</sup> In India, Turkey and Nigeria cases due to C. glabrata range between 30-37%. In the United States, Europe and Australia, C. albicans is the most common species identified in women with VVC (76-89%) followed by C. glabrata (7-16%). In these countries/continents, overall percentage of non albicans species associated with VVC ranges from 24% to 11%. Candida spp. distribution in China closely resembles as that of United States.<sup>4</sup>

**Impact on women's lives**

Vaginal thrush may cause great misery and embarrassment. The constant need to scratch may disrupt normal daytime activities, sexual activity, sleep and even spiritual activities.<sup>3</sup> A preliminary study by reported that women with RVCC were significantly more likely to suffer clinical depression, to be less satisfied with life, to have poor self esteem and to perceive their lives as more stressful. Additionally women also reported that their candidiasis seriously interfered with their sexual and emotional relationships.<sup>27</sup> Compared to the cases for women with other

chronic vaginal symptoms, symptoms with RVCC are reported to have the greatest negative impact on work and social life.<sup>4</sup>

**Public health and socio-economic impact**

VVC and RVCC is a major public health problem affecting a large number of otherwise healthy women of reproductive age group. Both forms of disease have a significant effect on quality of life and together pose a huge burden to the health care system.<sup>7</sup> Reproductive age being the most productive and active age of any society, proper and timely control of the disease would reduce the morbidity and sequelae thereafter. The overall impact would be a decrease in the man hour loss and increase in productivity.<sup>15</sup> Despite the introduction of OTC drugs for treatment of VVC, the costs of health care office visit to treat this disorder are still rising.<sup>8</sup>

**CONCLUSION**

Vaginal infections are a noted condition since antiquity. Ancient physicians of Egypt and Greece have mentioned vulvovaginal inflammation, vulval pruritus and pustular eruptions of the vulva. To treat various vulvovaginal conditions, they recommended the use of oil and incense or asses' urine, garlic, powdered horn of cow, cassia, peppermint water etc. and pessaries made from lint impregnated with various drugs. The high prevalence, substantial morbidity, and economic losses from RVCC require better solutions and improved quality care for affected women. Although imidazoles are generally known to be effective as first line treatment for VVC, the phenomenon of drug resistance has raised interest in substances of natural origin as a therapeutic alternative. As the use of methods other than main stream medicine become more widespread, it is important to be aware of both the conventional and non conventional management of recurrent VVC.

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