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# Local Application of Propranolol and Treatment of Diabetic Vulovagnitis

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## Abstract

**Background:** Propranolol (PRO) is a commonly used non-selective beta-adrenergic receptor antagonist used in the treatment of hypertension, angina, anxiety, cardiac arrhythmia, hyperthyroidism, essential tremor and as a prophylaxis against migraine, variceal bleeding and myocardial infarction diabetes mellitus (T2DM) is a debilitating disease with multiple complications resulting from hyperglycaemia, inflammation, and possibly immune dysfunction. It is well established that yeasts thrive in a sugar-rich environment, and therefore, it is logical to hypothesize that high glucose concentrations in patients with diabetes may be responsible for promoting the occurrence and recurrence of candidiasis. There are several potential mechanisms by which hyperglycaemia may facilitate vaginal candidal colonization. Hyperglycaemia impairs various aspects of host defense, including neutrophils and complement proteins, and also promotes the virulence of infecting organisms in patients with diabetes. To evaluate the effectivec of propranolol solution application in treatment of diabetic vulvovagnitis. Method. diabetic patients were diagnosed diabetic vulovagnitis were divided into test group and control group with the method of randomized controlled trial. The patients of test group were treated with local application of propranolo solution once a day. The patients of control group were treated vaginal douch applied locally on vaginal and local on vulva once a day. The course of treatment was 10-d.

**Result:** The curative indexes included the improvement of symptoms and signs of Vulovagnitis first pain relief, burning sensation, hotness, swelling and vaginal discharge. in group A symptoms cures in 80%, in group B symptoms cure in 12%. side effect of treatment in group A no side effect in group A nor in group B vaginal.

**Conclusion:** pronolol application promising for the treatment of diabetic Vulovagnitis in symptomatic women it combat symptoms and phos-

**Keywords:** Propranolol; Beta-adrenergic receptor antagonist; Hypertension; Angina; Anxiety; Cardiac arrhythmia; Hyperthyroidism; Myocardial infarction diabetes mellitus; Dysfunction; Diabetic vulvovagnitis; Symptoms cures; Sexually transmitted disease; Bacterial vaginosis; Trichomonas vaginalis; Candidiasis; Re-epithelialisation

**Abbreviations:** BV: Bacterial Vaginosis; TV: Trichomonas Vaginalis; CVV: candidiasis; DH: Diamitte Hospital; DV: Diabetic Vulvovagnitis; SC: Symptoms Cures; STD: Sexually Transmitted Disease

## Introduction

Vulvovaginitis (VV) is a commonly encountered symptom in the diabetes clinic [1]. Many patients are diagnosed to have diabetes when they present with symptoms suggestive of VV. Others experience episode of uncontrolled or refractory hyperglycaemia which can be attributed to untreated VV. Yet others may develop VV as an adverse effect of glucose-lowering medication, or as a sexually transmitted disease (STD) [2,3]. Aetiology The presenting symptom of VV is usually vaginal discharge, itching and/or odour. The common etiologies are bacterial vaginosis (BV), Trichomonas vaginalis (TV), and candidiasis (CVV). BV is due to replacement of normal vaginal flora by anaerobic bacterial overgrowth, including Prevotella sp, Mobiluncus sp, G. vaginalis, Mycoplasma and Ureaplasma. BV and TV can be STD, while CVV is rarely transmitted through sex [4]. Diagnosis The diagnosis of VV is made through history, physical examination, and simple laboratory tests [5]. However, it must be remembered that history alone may miss the diagnosis in a significant number of cases. Simple and economical tests, carried out in the clinic, help in correct diagnosis. Vaginal pH can be checked using pH strips. An elevated pH (>4.5) suggests BV or TV. Microscopic examination of a saline-solution specimen of vaginal discharge may reveal motile trichomonads or "clue cells' in BV. A KOH (potassium hydroxide) preparation will demonstrate hyphae or blastopores in CCV [4,6]. Culture may be required for confirmation, and urine microscopy may provide helpful clues to diagnosis as well.

Propranolol, a non-selective β-blocker, is used for the treatment of hypertension and a number of other cardiovascular diseases. Recently, topical or oral propranolol has been used to treat infantile haemangioma. [7-8]. Some scholars believe that oral propranolol can promote wound healing, for example in paediatric and adult burn patient [9,10], Romana-Souza [11] found that oral propranolol reduced local inflammatory response and improved skin wound healing in diabetic rats. However, other researchers think that oral propranolol can delay wound healing. It has been reported that propranolol dissolved in drinking water delays rat wound contraction and re-epithelialisation [12,13].

Propranolol inhibited motility and growth of Giardia lamblia and Trichomonas vaginalis Farthing et al., J in his study because of the inhibitory effect of propranolol on sperm motility D-propranolol at about 10-3 moles/liter in a tissue culture medium inhibited motility and growth of Giardia lamblia and Trichomonas vaginalis [14].

### Propranolol and anaesthetic, anagelsic effect

Panel Yu-et al 2012 in his study propranolol as a local anesthetic is more potent than lidocaine, and the sensory/nociceptive blockade caused by propranolol was longer than that caused by lidocaine. Co-injection

with propranolol markedly potentiated infiltrative cutaneous anal-gesia of lidocaine. Although it is not a replacement for lidocaine, propranolol may have value in producing a cutaneous analgesic effect following subcutaneous injection [15].

In study of Bruna Romana-Souza Propranolol administration improves cutaneous wound healing of hyperglycemic diabetic rats by reducing the local inflammatory response and improving subsequent phases of the repair proces as the inflammatory cell numbers and metalloproteinase-9 levels were reduced in the propranolol-treated group compared to the control group 14 days after wounding. Cell proliferation, mast cell number, collagen deposition, blood vessel density, and nitric oxide levels were increased in the propranolol-treated group compared to the control group 14 days after wounding [16].

## Method

This study conducted in department of Obstetrics and Gynecology at Diamitte hospital (outpatient). After taking written informed consent from patient prior commencing. A total of 60 patients diagnosed diabetic vulovagnitis were enrolled and randomly assigned into two study groups. Group A Included 30 patients were treated locally with local applications propranolol Group B Included 30 patients were treated locally vaginal douch. women found to have diabetic vulovagnitis were provided a course of oral and/or vaginal treatment and those who were not responsive to treatment were enrolled in study The Inclusion criteria were symptoms vaginal discharge, and vulvitis redness hotness, painfual/or other signs that, if combined, were diagnosed as diabetic Vulovagnitis. All case history were taken included personal, family history, menstrual history and obstetrics history previous history of oral contraception pills, IUCD, allergic examination general and local examination the patients were seated in the lithotomy position and received treament, depending on the group to which they were assigned and locally applied with propranolol solution for 5 minutes The patient remained in the sitting lithotomy position for 15 minutes repteated every day for 10 days. in group B Vaginal douch were applied locally as in group A evaluation of the therapeutic effect of treatment, cure defined as improvement of symptoms and signs as pain, sorness, hotnes, swelling vaginal discharge complications & side-effects were observed & recorded.

## Result

Total 60 patient were diagnosed diabetic vulovagnitis not responsible to systemic and local treatment divided into two groups A propranolol group and group B vaginal douchgroup after receiving local treatment follow up patients were reviewed one week and after treatment for effective of treatment and possible side effect our results in proprnolol group cure rate 80% after one week in other group cure rate 20% cure with vaginal douch in group A anaesthetic and anagelsic in 80% in group B only 20%; anti inflammatory effect in group A 70% in group B 10%, anti trichomonos effect in 50%, no effect in group Both group vaginal discharge in group A 30 case complain of vaginal discharge 25 cases cure 83% in group B 30 cases complain of vaginal discharge only possible side effect There were no complications due to the proprno!o! applications during the treatment follow-up period.

## Discussion

The aim of this study was to compare the safety and efficacy of local propranolol withe local vaginal douch in treatment of diabetic vulovagnitis. In this study, it was show propranolol effective in treatment of diabetic vulovagnitis and safer. In our study the patients were diagnosed diabetic vulovagnitis not responed to general and local treatment were treated with Propranolol applied local to vagina and vulva as local treatment has advantage over systemic treatment that increase its effectiveness and decrease side effect of treatment in this study propranolol has anagelsic and anaesthetic effect as patients the first symptoms to relief is sornes this agree with study Panel Yu-et al 2012 in his study that propranolol as a local anesthetic is more potent than lidocaine, and the sensory/nociceptive blockade caused by propranolol was longer than that caused by lidocaine. Co-injection with propranolol markedly potentiated infiltrative cutaneous analgesia of lidocaine. Although it is not a replacement for lidocaine, propranolol may have value in producing a cutaneous analgesic effect following subcutaneous injection [15].

Propranolol shows a local/cutaneous anesthetic effect ssimilar to lidocaine by decreasing Na+(17) and Ca2+ influxes [18]. It is well established the decrease of neuronal excitability by-adrenergic receptors (i.e., propranolol) in nociception [18,19], based on inhibition of voltage sensitive Ca2+ and Na+ channels


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activity, decrease of intracellular AMPc and reduction of the adenylcyclase activity [18-21]. In addition, -blockers are known to inhibit the phospholipase and to attenuates interleukin-6 and tumor necrosis factor-release, all the actions are strongly linked to analgesia [22-25]. Others mechanism of propranolol it combat trichomonis infection and giadrila evidence by improve of symptom and sign as yellowish, offensive vaginal discharge and itching this agree which study of Farthing et al., J in his study as propranolol has inhibitory effect on sperm motility so, D-propranolol at about 10-3 moles/liter in a tissue culture medium inhibited motility and growth of Giardia lamblia and Trichomonas vaginalis [14]. another mechanism is as hyperglycemi associated neutrophilia dysfunction propranolol anatoginst this effect this obvious in study of Michael Buckley. R, that propranolol prevented alchohol's inhibiting effect on granulocyte adherence and delivery to sites of inflammation, and significantly improved the survival of infected intoxicated animals. and preservation of normal granulocyte delivery would be expected to improve the defense against bacterial infection [26]. Thus, it appears that pharmac logic manipulation of granulocyte adherence may be helpful to an infected animal's host defense against bacterial infection. It is possible that antibacterial defense might be improved by the use of adherence-augmenting drugs in other clinical situations associated withh impaired adherence such as glucocorticoid therapy and multiple myeloma [27-29].

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