

# GARDNERELLA VAGINALIS

Thesis

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**REVIEW OF LITERATURE**

**INTRODUCTION AND AIM  
OF THE STUDY**

## INTRODUCTION AND AIM OF THE STUDY

*Gardnerella vaginalis* is a gram-negative rod, formerly classified as *Haemophilus vaginalis* or *Corynebacterium vaginale*. It is the organism most commonly associated with the so called "bacterial vaginosis" (Piot and Vanderhyden, 1984).

Bacterial vaginosis is characterized by a non-purulent, homogenous, malodourous vaginal discharge, by an increase in pH and the amine content of the vaginal fluid and by polymicrobial changes in vaginal flora including a decrease in the vaginal facultative *Lactobacillus* and an increase in *G. vaginalis* and in several anaerobic species (Spiegel et al., 1980).

A high prevalence of urethral colonization of *G. vaginalis* among male partners of infected women has also been reported leading some workers to postulate that *G. vaginalis* is sexually transmitted (Pheifer et al., 1978).

The male may act as a silent carrier and transmits the organism to his wife and this infection may cause many serious complications and may be transmitted to the newly born causing serious infections.



The aim of this study is to flash a light on *G. vaginalis* as a sexually transmitted organism in order to stress on the importance of examination, diagnosis and treatment of both male and female partners.

## HISTORY

## HISTORY

Leopold (1953) first reported the isolation of a small non-motile, non-encapsulated, pleomorphic, gram-negative rod (i.e., short bacilli) from the genito-urinary tract of women with cervicitis, and from the urethrae of their husbands, and stated that its requirements and morphology suggested a close relationship to the genus *Haemophilus*.

Two years later, Gardner and Dukes (1955) isolated this organism in their work to present evidence that the vast majority of the so called "non-specific" bacterial vaginitides constitute a specific infections entity caused by a single aetiological agent. Gardner (1955) observed that the majority of bacterial vaginitides show on microscopic examination solid fields of small pleomorphic gram-negative bacilli. The reports of culture of these organisms were extremely variable and in no way supported the contention that a single organism was responsible. Dukes (1955) used highly enriched media for culture and incubated the organisms under various oxygen and carbon dioxide tension. At the end of 48 hours, a 10% sheep blood agar plate, incubated under reduced oxygen tension, was found to contain thousands of minute transparent colonies which could be detected only by reflected light. A smear from these colonies showed bacilli similar to those seen on the direct smear. After finding

the identical organism in pure culture in 13 out of 14 patients considered as having vaginitis, it appeared that a specific aetiological agent had been found to explain the majority of "non-specific" bacterial vaginitides. Both Gardner and Dukes had assigned the name *H. vaginalis* to the newly isolated bacillus.

Gardner and Dukes (1955) had also observed that this organism was the predominant bacterium of the urethra in more than 90% of husbands of infected wives while the husbands of women without the infection seldom harbour the organism. Later in 1969, Criswell et al. further observed that after the wife was successfully treated, reinfection was predictable if the husband was not treated simultaneously.

Since the original description of *H. vaginalis*, numerous confirmatory reports have appeared in the literature. Among these was that of Wurch and Lutz (1955) who reported the presence of small gram-negative bacilli in vaginal discharges. Again, Lutz and Wurch (1954) and Lutz et al. (1956) published studies in which the clinical and laboratory findings were essentially identical to those obtained by Gardner and Dukes (1955).

Brewer et al. (1957) isolated from the vagina a small gram-negative non-motile bacillus apparently identical with

the one described by Gardner and Dukes (1955) and designated *H. vaginalis*. They accepted the name even though some aspects leading to its classification were still incomplete. They did not obtain pure culture of this bacterium, contrary to Gardner and Dukes (1955) who had frequently obtained pure culture.

Heltai (1959) confirmed the association between non-specific vaginitis and *H. vaginalis*. Both Brewer et al. (1957) and Heltai (1959) did not find this organism to be the sole isolation from the vagina and concluded that *H. vaginalis* was not the sole aetiologic agent of non-specific vaginitis.

In the way to find the taxonomic status of *H. vaginalis*, Zinnemann and Turner (1963) recommended the reclassification of the organism to the genus *Corynebacterium* because under optimal growth conditions, it was gram-positive and formed polar granules.

Electron microscopy studies of Reyn et al. (1966) showed that the organism's cell wall resembled that of a gram-positive bacterium. But Criswell et al. (1972) postulated that their electron microscopic studies of the same strain indicated that the organism was more probably gram-negative.

Moss and Dunkelberg (1969) first described two types of *H. vaginalis*, one is facultatively anaerobic, with acetic acid as the major end product of fermentation. The second type is considered obligatory anaerobic. Although *H. vaginalis* is considered facultatively anaerobic, no obligatory anaerobic strains had been discovered until Malone et al. (1976) reported and studied six strains of *G. vaginalis* that were obligatory anaerobic on original isolation. The cellular and colonial morphological characteristics of the obligatory anaerobic strains were similar to those of the facultative and reference strains.

Greenwood and Pickett (1980) resolved the issue by proposing a new genus; *Gardnerella*, to include catalase and oxidase negative, gram-negative to gram-variable bacteria with laminated cell walls which produce acetic acid as the major end product of fermentation and reclassified *Corynebacterium vaginale* under this new genus. Piot (1980) transferred *H. vaginalis* (*Corynebacterium vaginale*) to the new genus *Gardnerella* on the basis of phenotypic and deoxyribonucleic acid studies.

**MICROBIOLOGY**