

## Research Article

# Genital Infections with *Gardnerella vaginalis* at Fann University Hospital (Dakar) and Saint-Louis (Senegal)

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## Abstract

**Background:** Bacterial vaginosis is a very common infection in women, especially during sexual activity.

We took stock of *Gardnerella vaginalis* infections in women received for vaginal swabs at the laboratories of two hospitals in Senegal: the National University Hospital Center (CHNU) in Fann and the Regional Hospital Center (CHR) in Saint Louis.

**Material and Methods:** Our study is retro-prospective over two years between January 1, 2013 and December 31, 2014. We worked on a total of 5928 vaginal samples.

We performed the measurement of vaginal pH, the potash test, the macroscopic and microscopic examinations on vaginal secretions.

**Results:** We obtained 1240 (21%) cases of *Gardnerella vaginalis* vaginosis, of which 826 (66.6%) originated from CHNU de Fann and 414 (33.4%) cases from the CHR of Saint-Louis.

The majority age group was [24-29 years old] with 317 cases.

The prevalence at Fann was 23% and 17% at the CHR of Saint-Louis.

More than 75% of the patients had whitish leucorrhoea.

**Conclusion:** Given this prevalence, early diagnosis and effective treatment are essential to avoid clinical symptoms and complications related to this disease.

**Keywords:** *Gardnerella vaginalis*; Bacterial vaginosis; Genital infections

## Introduction

Bacterial vaginosis is a common infection in women. In black Africa, it affects 20 to 50% of women [1-9]. It is responsible for 16 to 29% of cases of prematurity, chorioamnionitis, spontaneous abortions and low birth weights [3,4].

It results from a disorder of vaginal flora and an abnormal proliferation of commensal bacteria of the vagina (*Gardnerella vaginalis*, mycoplasmas and anaerobic species). The precise origin of that disorder is unknown [10-16].

*Gardnerella vaginalis* is the incriminated bacterium in that condition. In some conditions, this bacterium can become pathogenic and lead to disorders of the vaginal flora. Its presence is higher in frequency (83 to 98% and in a much larger quantity than in the normal flora [8].

The aim of this study was to assess the prevalence of infections due to *Gardnerella vaginalis* in women received for vaginal swabs in the laboratories of two hospitals in Senegal.

Our study intends to elucidate the vaginal exudat characteristics, but also to set up criteria of fast diagnosis. This will allow to better understand and ameliorate the diagnosis, but also show the place occupied by this condition in vaginal infections.

## Materials and Methods

This was a two-year retro-prospective study carried out between January 1 and December 31 of 2014 in women for which a vaginal swab was done at the Fann University Hospital and St Louis Regional Hospital.

### Studied population

The studied population was made of patients admitted in the laboratory of these two above structures for patients who had a vaginal swab during that period of study.

### The swab

The sample is taken on the vaginal walls or at the level of the posterior cul de sac. We made a PH vaginal measurement and a potash test, but also carried out microscopic examinations and an identification of the germs involved in this infection.

### Study of the samples

A microscopic examination gave us the colour, aspect and smell of the secretions. The microscopic examination, after a Gram coloration, highlighted the replacement of lactobacillus by a mixed flora: small coryneform bacilli to variable Gram suggesting *Gardnerella* bacilli to incurved variable Gram suggesting *Mobiluncus*.

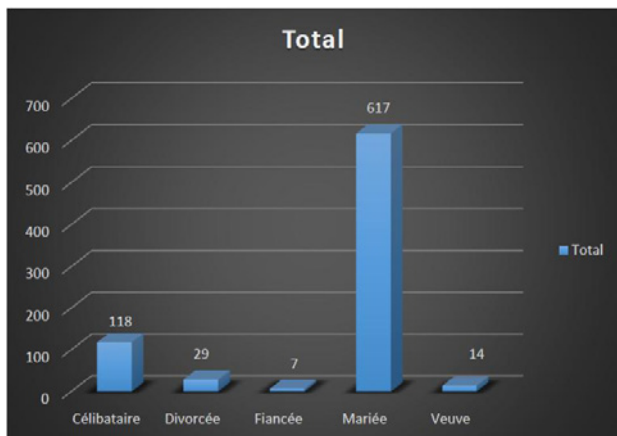


Figure 1: Distribution of patients according to marital status at Fann University Hospital.

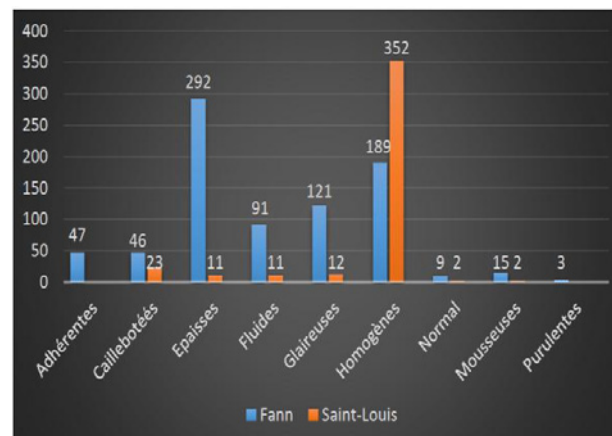


Figure 3: Distribution of patients according to the consistency of leukorrhea.

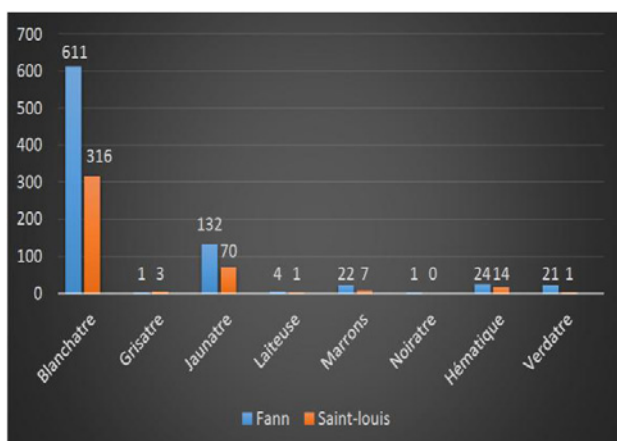


Figure 2: Distribution of patients according to the colour of leukorrhea.

Table 2: Distribution of patients according to gravidity at Fann University Hospital.

GRAVIDITES	NUMBERSS	PERCENTAGES
G0	273	35,4
G1	170	22
G2	116	15
G3	82	10,6
G4	52	6,8
G5	29	3,8
G6	23	3
G7	11	1,4
G8	06	0,7
G9	04	0,5
G10 and above	02	0,3
<b>Total</b>	<b>772</b>	<b>100</b>

Table 1: Distribution of women according to marital status.

MARITAL STATUS	NUMBERS
Single	118
Divorced	29
Engaged	7
Married	617
Widows	14
<b>TOTAL</b>	<b>785</b>

A direct examination, after a Gram coloration, enabled to set up the type of flora.

## Results

### Global results

We collected a total of 5928 samples of which 3493 (59%) came from the Fann University Hospital and 2435 (41%) from the St Louis Regional Hospital. We had 1240 cases of vaginosis to *Gardnerella vaginalis* of which 826 (66.6%) came from the Fann University Hospital and 414 (33.4%) cases from the St Louis Regional Hospital.

The majority age group was [24 – 29 years old] with 317 cases.

The total prevalence of vaginosis to *Gardnerella vaginalis* was 21%. It was 23% at Fann University Hospital and 17% at St Louis Regional Hospital.

### Sociodémographic results

**Age distribution :** The average age of patients was 31 years old.

At Fann University Hospital, portering was more common with age range [24-29 years old] with 28.1% followed by age ranges [30-35] years old, [18-23] years old, [36-41] years old, with respectively 25.3%, 17.5%, and 15%. At the St Louis Regional Hospital, the majority age group was [30-35] years old.

1. Distribution according to parity at Fann University Hospital

According to parity, the vaginosis to *Gardnerella vaginalis* was predominant in patients with less parity: 52% of women wit P0 parity; 17.7% for women with P1 parity; 13.2% for women with P2 parity; 7.4% for women with P3 parity; 3.8% for women with P4 parity; 3% for the P5; 1.2% for the P6 and less than 1% for each parity from P7 tp P14.

2. Other results

**Table 3:** Distribution of patients according to the colour of leukorrhea.

Colour of leukorrhea	FANN University Hospital	ST-LOUIS Regional Hospital
Whitish	611	316
Greyish	1	3
Haematic	24	14
yellowish	132	70
Milky	4	1
Brown	22	7
greenish	21	1
Blackish	1	0
<b>Total</b>	<b>816</b>	<b>412</b>

**Table 4:** Distribution of patients according to the consistency of leukorrhea.

Consistency of leukorrhea	Fann University Hospital	Saint-Louis Regional Hospital
Adherent	47	0
Curd	46	23
Thick	292	11
Fluid	91	11
Glairy	121	12
Homogenous	189	352
Soapy	15	2
Normal	9	2
Purulent	3	0
<b>TOTAL</b>	<b>813</b>	<b>413</b>

Flora IV types were the majority (73.3% in Fann) and (88.4% in St Louis).

The association rate *Gardnerella vaginalis* and *Mobiluncus* was 11.8% in Fann and 13.5% in St Louis.

Some association cases *Gardnerella vaginalis* and *Chlamydia trachomatis* were jotted down (2.7% in Fann and 17.8% in St Louis). However, it is worth noting that the *Chlamydiae* research was not systematic among all patients.

## Discussion

During our study, the global prevalence of vaginosis to *Gardnerella vaginalis* in both structures was 21%. Our results are comparable to those obtained by Fofana (21.7%) in Bobo Dioulasso, but are inferior to those from Koueke in Cameroon (42%) [12].

Western writers jotted down rather badly matched prevalences between 15 and 60% [14,15].

The presence of *Gardnerella vaginalis* was higher in the age range between 24 and 35 years old in both structures. These results match with those of Faye-Kette who found out the same age ranges in Abidjan [5].

That situation could be explained by the fact that this age range is more active sexually. During that period, flora becomes favourable to infections [10].

Among women carrying *Gardnerella vaginalis* at vaginal smear,

married women represented 78.5% of the cases against 15% for single women. These results match with those of Anagounou who found 60% of married women against 40% for single ones. On the contrary, Faye-Kette and coll. Found that single women were more numerous than married ones (59% against 41%) [2,5].

Leukorrhea was whitish in 76% and 75% of patients in St Louis and Fann respectively. The abundant leukorrhea was found in 46.2% in St Louis Regional Hospital and 45% in Fann University Hospital, while Faye-Keyette and coll. Found in greyish-white leukorrhea in the same proportions (76.5%) but abundance was more marked (62%) [6]. The distribution of bacterial vaginosis following the type of flora enabled to highlight the disorder of vaginal flora going with it. At Fann University Hospital, 11.8% of patients had the *Gardnerella vaginalis* and *Mobiluncus spp* association. In St Louis Regional Hospital, the association rate was 13.5%. These percentages are very low compared to those observed by Holst who had found bacterial vaginosis in more than 96% of women, and the presence of one or two *Mobiluncus* species [11].

The search for microplasm was carried out on 699 patients and that of *Chlamydia* on 629 ones.

In St Louis Regional Hospital, 36% of patients were positive to *Gardnerella* and *Mycoplasma hominis*, and as for Fann University Hospital, the association rate was 28.2%.

The association rate *Gardnerella vaginalis* and *Ureaplasma urealyticum* was of 62% at Fann University Hospital and 36% at St Louis Regional Hospital. The *M. hominis* and *U. urealyticum* prevalences that we found in this study were higher to those reported by the literature, FAYE-KETTE while coll obtained 22% and 20% of women carrying *Ureaplasma urealyticum* of *Mycoplasma hominis* respectively [7]. The association rate *Gardnerella vaginalis* and *Chlamydia trachomatis* was of 17.8% at St Louis Regional Hospital and 2.7% at Fann University Hospital. This shows the difficulties in the treatment of this condition from multiple etiologies. As a result, a treatment targeting a single germ remains insufficient.

## Conclusion

*Gardnerella vaginalis* constitutes the main agent of bacterial vaginosis. The diagnosis of this condition is easy to put in practice in laboratories. It can be responsible for complications like neonatal infections, repeated abortions, choroamnionitis and other obstetric infections. This study allowed us to show the place that occupy bacterial vaginosis in the infections of the uri-genital sphere.

With a 21% prevalence, we can conclude that vaginosis to *Gardnerella vaginalis* constitutes the first etiology of genital infections before candidiasis, trichomoniasis and infections to chlamydia and mycoplasmas.

We recommend to strengthen the diagnosis to the laboratory of this condition so as to allow clinicians to have a good patient management but also to avoid complications related to that infection.

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