

## OCCURRENCE OF GRAM POSITIVE BACTERIA IN VAGINITIS

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### ABSTRACT

Microbiological studies were done for twenty five complicated cases of pelvic infections, for the prevalence of aerobic and anaerobic gram +ve bacteria; and their sensitivity to antibiotics commonly used by gynaecologists.

Forty two strains of bacteria were collected, 23 (54.76%) isolated aerobically and 19 (45.23%) anaerobically

Most of them were gram +ve cocci (69.77%) with the Lactobacilli completely absent. The isolates were highly resistant to the different antibiotics, especially penicillin G, cefotaxime, metronidazole and ampicillin: 85.71%, 64.28 %, 52.38 % and 52.38% respectively, while the ciprofloxacin was found to be the most effective one (95.35 % were sensitive).

### INTRODUCTION

The vaginal discharges are common in women of childbearing age; during the vaginal infection, these discharges altered <sup>(1)</sup>.

Among the vaginal infections, the main role is played by bacterial vaginosis which is now, from the pathophysiological point of view, associated with a severe dearrangement of the vaginal environment system with highly prevalent obligate anaerobic bacteria but without Lactobacilli <sup>(2)</sup>.

The clinical diagnosis of bacterial vaginosis is based on the following criteria: thin grey-white discharge, vaginal fluid pH above 4.5, a fishy odor when 10% KOH solution added to the vaginal fluid, and the presence of clue cells on a saline wet mount <sup>(3)</sup>.

A probably more sensitive indicator of the diagnosis is based on a gram stain, where the normal Lactobacillus-dominated vaginal flora is changed to the Lactobacillus-deficient flora of bacterial vaginosis.

### MATERIALS AND METHODS

#### MATERIALS

##### I. PATIENTS:

Twenty-five women who attend the gynaecologist clinic, with symptoms of recurrent pelvic infections (vaginosis), whose ages ranging between (20–50) years, all haven't, took any antibiotic within the previous (7–10) days before attending the clinic.

##### II. SPECIMENS COLLECTION:

Pelvic and deep vaginal swabs were taken by the aid of sterile cotton swabs; a gynaecologist took swabs from the vaginal fonices with the use of a sterile vaginal speculum.

The cotton swabs were immersed in Brain-Heart-Infusion (BHI-Difco) broth tubes and transferred to the laboratory.

#### METHODS

##### I. MICROSCOPY:

Smears from all specimens were stained by the gram's technique and examined under the oil immersion lens of the light microscope ( $\times 100$ ).

##### II. CULTURES:

Each swab was cultured on two Blood Agar plates (BA-Oxoid), one of these plates was incubated aerobically at 37 °C for 48 hrs and the other was incubated anaerobically at the same conditions. Color, shape and type of hemolysis was observed on the BA plates for the different colonies appeared.

The different isolates were subcultured on BHI-agar slants for further diagnosis and antimicrobial sensitivity.

##### III. ANTIMICROBIAL-SENSITIVITY TEST:

Disk-diffusion method was used to check up the susceptibility or resistance of the isolates to seven antimicrobial agents: *Penicillin G*, *Tetracycline*, *Ciprofloxacin*, *Gentamicin*, *Ampicillin*, *Cefotaxime* and *Metronidazole*, whose abbreviations, concentrations and sources were shown in Table –1–

**Table (1):** The Type, Concentration, Source and Symbol of Antimicrobial Disks.

#	Type	Conc. in Disk	Source	Symbol
1	<i>Penicillin G</i>	10 I.U	Al-Raze Diagnostics	P
2	<i>Tetracycline</i>	30 mcg	SPAN Diagnostica	T
3	<i>Ciprofloxacin</i>	30 mcg	HI Media-India	CF
4	<i>Gentamicin</i>	10 mcg	Al-Raze Diagnostics	GM
5	<i>Ampicillin</i>	10 mcg	Al-Raze Diagnostics	AM
6	<i>Cefotaxime</i>	30 mcg	Bioanalyse	GTX
7	<i>Metronidazole</i>	50 µg	OXOID. England	MTZ

## RESULTS AND DISCUSSION

Forty two isolates were collected from the twenty five specimens; twenty four (24) aerobic microorganisms and nineteen (19) anaerobic

microorganisms; i.e., (54.76% and 45.23%) respectively.

The common morphological characteristics of colonies appeared on BA-plates were shown in Table -2-

**Table (2):** The Characteristics of Selected Isolates Colonies on BA.

No. of Isolate	Growth Condition	Color	Shape	Hemolysis Type
1	Aerobic	Grey	Flat, Large	$\beta$ -hemolysis
3	Aerobic	White	Convex, Small	No-hemolysis
4	Anaerobic	Grey	Flat	No-hemolysis
16	Anaerobic	White	Convex, Medium	No-hemolysis

The gram staining results showed that the gram positive (g+ve) isolates were Streptococci, Staphylococci, while most of the gram negative (g-

ve) isolates were Diplococci (*Neisseria spp*) as shown in Table -3-

**Table (3):** Morphology and Gram Staining of the Isolates.

Morphology	Gram Stain	No. of Isolates	%
Streptococci	g+ve	12	28.57
Staphylococci & Micrococci	g+ve	18	42.86
Diplococci	g-ve	12	28.57
Total		42	100

Thirty (71.43%) of the isolates were gram positive cocci; Attalah<sup>(4)</sup> found that 46.9% of the microorganisms isolated from the deep vagina were gram positive cocci; in our study, 28.57% of these (g+ve) cocci were arranged in chains, some of them hemolyse blood, and related to the Lancifield group  $\beta$ -Streptococci -GBS-, which has been found normally in the vaginal flora in about (5-50%)<sup>(5, 6)</sup>, but taking account that those women had symptoms of pelvic infections (bacterial vaginosis), and the disappearance of the Lactobacilli in the gram stain smears; so we may consider them as a causative agent for this type of infection because of its opportunistic

nature<sup>(7)</sup> especially in the absence of Lactobacilli<sup>(8)</sup>; the other Streptococci that do not hemolyse blood ( $\gamma$ -type of hemolysis) and related to the GDS or the Enteric Streptococci<sup>(9)</sup>.

When we study the effect of selected antibiotics (Table -1-) on the 42 isolates of bacteria, we found these microorganisms sensitive to some of them (especially gentamicin, ciprofloxacin and tetracycline), and most of them were resistant to penicillin, cefotaxime, ampicillin and metronidazole. Only 2 isolates (4.6%) were resistant to the 7 types of antibiotics used in this study (Table -4-).

**Table (4):** The Resistance of the Isolates to the Antimicrobial Agents.

Antibiotic	No. of Resistant Isolates *	% of Resistance
Penicillin G	36	85.71
Cefotaxime	27	64.28
Metronidazole	22	52.38
Ampicillin	22	52.38
Tetracycline	17	40.47
Gentamicin	10	23.81
Ciprofloxacin	2	4.76

\* The total number of the isolates was 42

The other isolates were sensitive to some of the agents and resistant to others, (85.71%) of the isolates resist penicillin G, followed by the resistance to

cefotaxime (64.28 %) and the resistance to metronidazole and ampicillin (52.38 %); while the resistance to the other antibiotics was lower (40.47%,

23.81%) for tetracycline and gentamicin respectively, as shown in Table –4–

The isolates were sensitive to ciprofloxacin in a very good manner (only 4.76% of the isolates were resistant).

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25

(%45.23) 19

(%54.76) 23

42

(%69.77)

%51.16 %51.16 %62.79 %86.04 :

%95.35