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2012 (HVS) High Vaginal Swabs (270)

2013

(%14.3) (%93.3) (36) (%5.2) (13) (%60.3) (152)  
(%20.2) (51)  
(%63.8)  
*E.coli* (%36.2)

(%66.7) (%93.3) (50-20)

## Isolation and Identification of some Microorganisms Causing Vaginitis and Cervicitis and Relationship of Risk Factors with these Infections

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### ABSTRACT

This research was performed to isolate and identify the Microorganisms causing vaginitis and cervicitis and relationship of some risk factors with these infections. Two hundred and seventy high vaginal specimens were collected during the period from December 2012 until the end of May 2013,

from pregnant and non- pregnant women of different ages, who had the clinical symptoms of vaginitis and cervicitis infections.

Isolation and identification results showed that (252) specimen (93.3%) were positive for microbial culture, these specimen distributed among (152) specimen (60.3%) appeared single bacterial growth, (13) specimen (5.2%) were mixed bacterial growth, (36) specimen (14.3%) mixed bacterial with candida growth and (51) specimen (20.2%) candidal growth only.

Gram positive bacteria formed the high percentage (63.8%) compared with Gram negative bacteria (36.2%). *Staphylococcus spp.* were the most isolate among Gram positive bacteria and *E.coli* were the most isolate among Gram negative bacteria. *Candida albicans* showed significant appearance among positive microbial cultures either as single or mixed with bacteria.

Results showed relationship between some risk factors with studied infections, it was found that almost all infections were in the married women, aged (20-50) years (93.3%) and the most infections in non- pregnant women (66.7%), in addition to the role of other diseases (such as UTI, diabetes) ,various contraceptive methods and other risk factors.

**Keywords:** Vaginitis, Cervicitis, Risk factors.

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Cervix                      Vagina  
Lactobacilli

Bacteriocins

.(Curran, 2010; Hainer and Gibson, 2011)

.(Quan, 2000; 2004 )

( )

(%40-30)

(%50-40)

%40-20

NIAID and NIH, 2003; )

Bacterial Vaginitis (BV)

.(Koumans *et al.*, 2007

%85

Prematurity

.(Hemalatha *et al.*, 2013) UTI

.....

( )

.(Hainer and Gibson, 2011)

(2013) (2012) (HVS) High Vaginal Swabs 270

(72 -20)

Vaginitis

			<b>Name</b>	*
			<b>Age</b>	*
		<b>(Non Married Married )</b>		*
		<b>Pregnant or Non- pregnant</b>		*
			<b>No. of Pregnancy</b>	*
			<b>No. of Abortion</b>	*
		<b>(Contraceptive tablets (IUD) )</b>		*
<b>.(</b>	<b>UTI</b>	<b>Diabetes )</b>		*
			<b>Occupation</b>	*
			<b>Residence</b>	*

	Vaginal Speculum		
	:(Brooks <i>et al.</i> , 1998)		
	pH test paper		-
. pH			
)		KOH%10	-
		.( Fishy odor	-
	Epithelial cells	Clue cell (x100)	-
		. <i>Gardnerella vaginalis</i>	
		.(Nugent <i>et al.</i> , 1991)	
		Pus cell (10)	-
		<i>Trachomonas vaginalis</i> (x40)	-
	Brain Heart Infusion (BHI) broth		-

:

**MacConkey Agar, Blood Agar, medium SDA**

: (48 -24) ° (37)

**Human Blood Tween Agar, MRS Agar, Columbia Blood Agar, Chocolate Agar**

(3 -2) ° (37) Anaerobic Jar

.(Collee *et al.*, 1996).(Atlas, 2006; Koneman *et al.*, 2006).(Konemane *et al.*, 2006; Collee *et al.*, 1996; Macfaddin *et al.*, 1985 )**Analytic Profil Index API**

.....

(1).

**API :1**

Streptococci	Api 20 strep	1
Enterobacteriaceae	Api 20 E	2
Anearobic	Api 20 A	3
Staphylococci	Api Staph	4
Candida	Api Candida	5
	Apicorany	6
Haemophilus and Neisseria	Api NH	7

(24) ° (37)

(API)

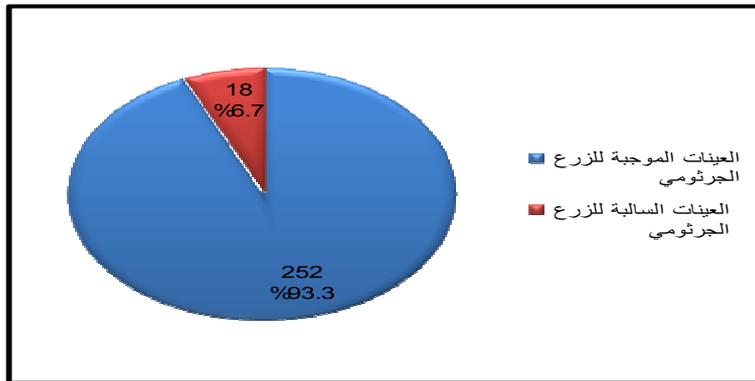
**Index**

**Germ Tube Formation Test**

*C.albicans* (Forbes *et al.*, 2007)

-1

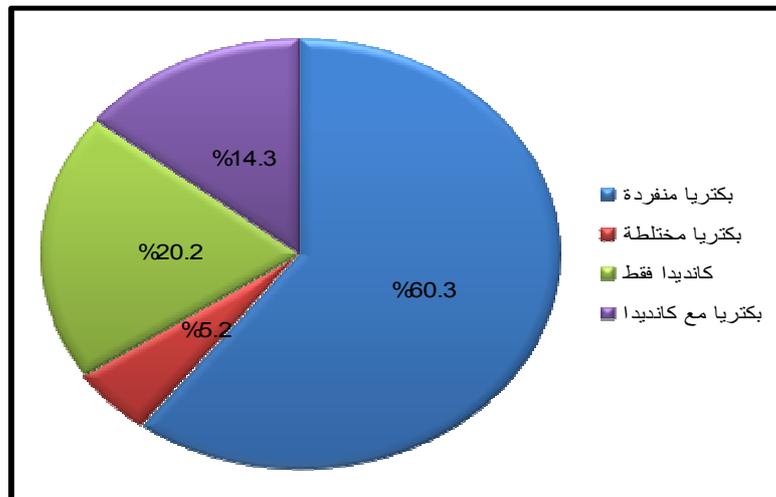
Vaginitis (183) (87) (270) (72-20)  
 )  
 (1) (Cervicitis)  
 (%93.3) (252)  
 .(%6.7) (18)



:1

(%5.2) (13) (%60.3) (152)  
 (%20.2) (51) (%14.3) (36)  
 .(2)

(5) (105) Razzak *et al.*, (2011)  
 (33) (2012) (110)  
 (27) (60)  
 (392) (471) (63) Masood *et al.*, (2009)  
 .(*Candida*) (16)



:2

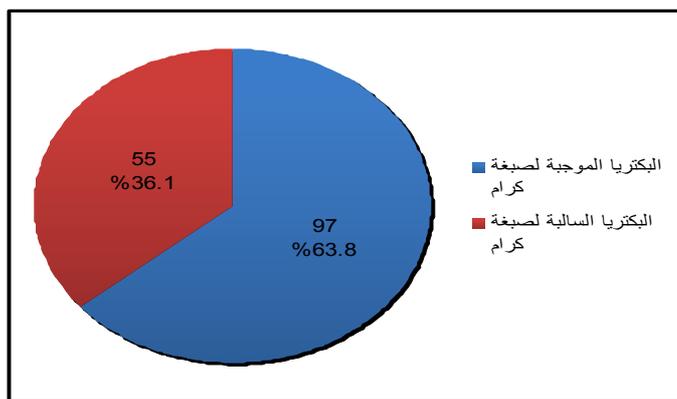
(152) (%63.8)  
 (3) (%36.2)

(2005)

.....

Razzak *et al.*, (2011)

(130) (%44.8) (%66.2)



:3

(2)

(38) *Staph.epidermidis* (2)  
 (%20.4) (31) *Staph.aureus* (%25)  
 (%3.9) (6) *Listeria spp. Strep. pyogenes*  
 (%2.0) (%3.2) (3) (5) Group-B Streptococci (GBS) *Aerococcus viridans*  
*Staph.lentus* (%2.0) (3) *Staph.saprophyticus*  
 (%0.7) (1) *Actinomyces Staph.heamolyticus*

*Staph.epidermidis*

(2001)

(2001)

*Staph.saprophyticus*

(220)

(%18.2)

GBS

(%2.0)

(2)

(10) *Proteus mirabilis*

(%9.9)

(15)

*E.coli*

(6)

*Klebsiella pneumoniae Pseudomonas aeruginosa*

(%6.7)

*Mobiluncus spp. G.vaginalis* (%3.9)  
 (1) *Citrobacter Niesseria gonorrhoeae* (%3.2) (5)  
 (%2.0) (3) *Diphtheroid spp.* (%0.7)  
 Braunwald *et al.*, (2001) *E.coli*  
*E.coli*  
 (2005)  
 (2008)  
*et al.*, (2011) (%74)  
*Staph. aureus* Razzak  
 (Perry and Staley, 1997)

:2

%		
25	38	<i>Staph.epidermidis</i>
20.4	31	<i>Staph.aureus</i>
2.0	3	<i>Staph.saprophytics</i>
0.7	1	<i>Staph.lentus</i>
0.7	1	<i>Staph.haemolyticus</i>
3.9	6	<i>Streptococcus pyogenes</i>
2.0	3	(GBS)Group-B Streptococci
0.7	1	<i>Actinomyces</i>
3.9	6	<i>Listeria spp.</i>
3.2	5	<i>Aerococcus viridians</i>
1.3	2	<i>Gemella haemolysans</i>
9.9	15	<i>E.coli</i>
6.7	10	<i>Proteus mirabilis</i>
3.2	5	<i>Gardnerella vaginalis</i>
3.2	5	<i>Mobiluncus spp.</i>
0.7	1	<i>Niesseria gonorrhoeae</i>
2.0	3	<i>Diphtheroid spp.</i>
3.9	6	<i>Klebsiella pneumoniae</i>
2.0	3	<i>Serratia odorifera</i>
0.7	1	<i>Citrobacter spp.</i>
3.9	6	<i>Pseudomonas aeruginosa</i>
% 100	152	Total

.....

*Staph.aureus Staph.epidermidis*  
(2005)  
*.Staph.saprophyticus*

*Staph.saprophyticus*  
*Staph.aureus Staph.epidermidis*

(152) (%3.9) *Listeria spp.*

.Repeated abortion

(2001)

(%2.0)

( GBS)

GBS

(438)

(%18.2)

.(Lener, 1977; Feikin *et al.*, 2001)

(3)

*Klebsiella* )

13 (%7.6)

(*pneumoniae + Staph.epidermidis*

(%30.8)

(*Staph.aureus+ Proteus mirabilis*)

(*Staph.epidenmidis + E.coli*)

(*Staph.aureus+ Strep.pyogenes*)

Lennox *et al.*, (2013)

(13)

(%15.4)

(*Staph.aureus+ E.coli*)

Razzak *et al.*, (2011)

(130)

(35)

:3

%		
30.8	4	<i>Staph.epidermidis+ E.coli</i>
15.4	2	<i>Staph.aureus+ Strep.pyogenes</i>
7.6	1	<i>Klebsiella pneumonia+ Staph.epidermidis</i>
15.4	2	<i>Staph.aureus+ E.coli</i>
30.4	4	<i>Staph.aureus+ Proteus.mirabilis</i>
<b>100</b>	<b>13</b>	<b>Total</b>

*C.albicans*

*C.albicans* (%20.2) (252) (51)

(%27.8) *E.coli* (4)

*Staph.aureus Staph.epidermidis,* (36)

(5) *Strep.pyogenes Proteus mirabilis* . (%16.7)

*Klebsiella* (%11.0) (%13.9) (4)

(%5.6) (%8.3) (2) (3) *Staph.saprophyticus pneumoniae*

Shrestha *et al.*, (2013) (36)

:4

***Candida albicans***

%		
27.8	10	<i>C.albicans + E.coli</i>
16.7	6	<i>C.albicans + Staph.aureus</i>
5.6	2	<i>C.albicans + Staph.saprophyticus</i>
13.9	5	<i>C.albicans + Proteus mirabilis</i>
8.3	3	<i>C.albicans + Klebsiella pneumonia</i>
11	4	<i>C.albicans + Strep.pyogenes</i>
16.7	6	<i>C.albicans + Staph.epidermidis</i>
<b>100</b>	<b>36</b>	<b>Total</b>

.(Tortora *et al.*, 1998)*Candida*

*albicans*

*C.albicans* Vaginitis (2005)

(202) (%19.8)

.(2010) Razzak *et al.*, (2011)

*Trichomonas vaginalis*

.....

(270)

(72 -20)

50 20

(5)

50

(2005)

(65-55)

(%30)

(35 -25)

Vulvovaginitis

Nomelin *et al.*, (2010)

Jones *et al.*, (2011)

(Acikgoz *et al.*, 2002)

(29-20)

(39-30)

46

(2005 )

(pH)

(5)

(31)

(%48.0)

(121)

(%12.3)

(33)

(5)

(%7.2)

(18)

(%13.1)

*Candida albicans*

*Candida albicans*

(Mahdi and Al-Hamdani, 1998)

(Vazques and Sobel, 2002)

*C.albicans*

(De-leon *et al.*, 2002)

(5-3) (%56.6)  
 (1998) WHO  
 (2000) Christoph Stuart 4  
 (2007) (2007)

:5

%	Vaginitis						
	%		%		%		
93.5	19.4	49	18.3	46	55.6	140	50
6.7	0	0	1.9	5	4.8	12	50
33.3	7.9	20	13.1	33	12.3	31	
66.7	11.5	29	7.2	18	48.0	121	
43.1	8.7	22	7.1	18	27.3	69	
15	0	0	8.7	22	6.3	16	
32.8	3.5	9	9.9	25	19.4	49	
3	0	0	0.3	1	2.7	7	
56.6	3.5	9	18.2	46	34.9	88	
13.7	1.9	5	3.5	9	8.3	21	
100	19.5	49	20.2	51	60.3	152	
	-	-	-	-	-	-	

.....

**(Abortion)**

(%8.3)

(% 13.7)

(%1.9)

(%3.5)

*Listeria spp.*

*Streptococci*

Spontaneous abortion

.(BV)

.(Reeder *et al.*, 1997)

(UTI)

UTI

(5)

(%43.1)

.(%56.7)

(%27.3)

.(%8.7)

(%7.1) *C.albicans*

UTI

(Loh and Sivakingam, 2007)

*Streptococci Group B*

*K.pneumonia P.meribilis*

*E.coli*

*.Staphylococcus spp.*

% 30-10

.(Al-Janabi, 2001)

PH

(Ramzan *et al.*, 2004)

(5)		<b>Diabetes</b>	
	(%8.7)		(%6.3)
	1998	Bohannon	(De-leon <i>et al.</i> , 2002)
			Vulvovaginal candida infection
		(%46) Goswami <i>et al.</i> , (2000)	
			(%23)
			(IUD)
	(%32.8) IUD		(5)
	(%9.9)	(%19.4)	
(IUD)			(%3.5)
			(%13.7) Hellbery <i>et al.</i> , (2001)
			Thulkar <i>et al.</i> , (2010)
	IUD		Pham <i>et al.</i> , (2012)
<b>Contraceptive tablets</b>			(5)
	(%3.17)		
		(%0.3) (%2.7)	
		( )	
			(2007)
(Rashid <i>et al.</i> , 1991)			
		(Claeys <i>et al.</i> , 2001)	(Berglund <i>et al.</i> , 2002)

.....

(%40.8)

(%59.2)

.(2004)

.(2005)

.(2001)

.(2001)

*Streptococcus agalucia* (GBS)

.(2010)

.529-521 (2)10 .

.(2005)

.(2007)

.249-239 (1)23 .

.(2008)

.13-8 (2)

.(2005)

*Calvatia craniformis*

.(2012)

.10-1 (2)4

.(2007)

.14-3 (4)4 .

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