

Prevalence of listeriosis among pregnant women in Libya

Presented by

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INTRODUCTION

Listeria a bacterial genus containing
Seven species named after the English
surgeon: ***Joseph Lister***

-*L.monocytogenes*

-*L.ivanovii*

-*L. innocua*

-*L.welshimeri*

-*L.seeligeri,*

-*L.grayi*

-*L.muarryi.*

Listeria monocytogenes - The main species considered to be
clinically significance

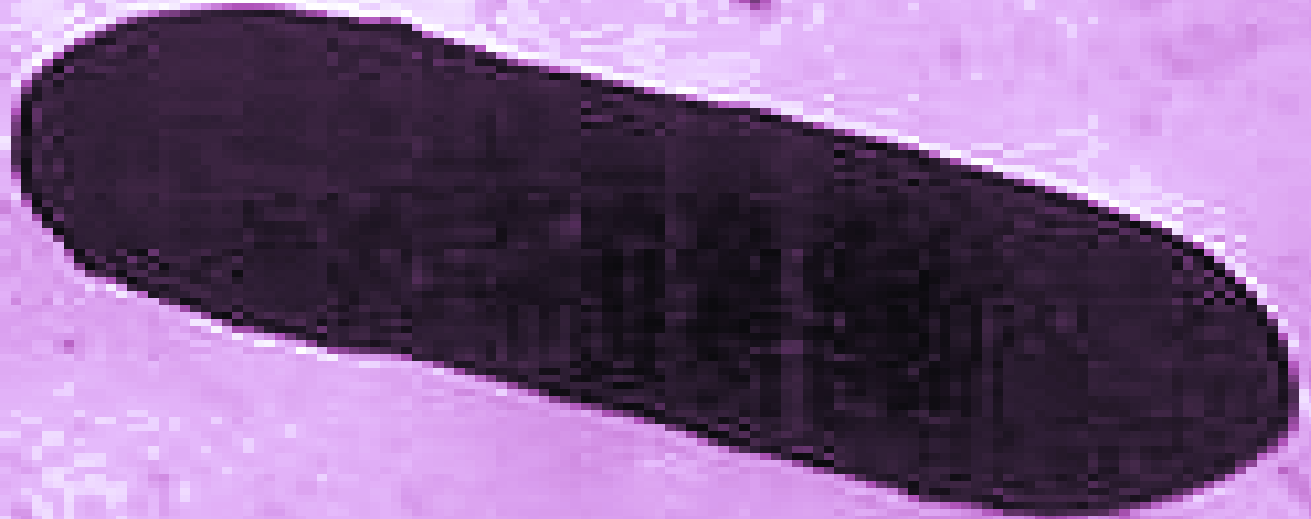
L. ivanovii have been implicated in human infections

Microbiology

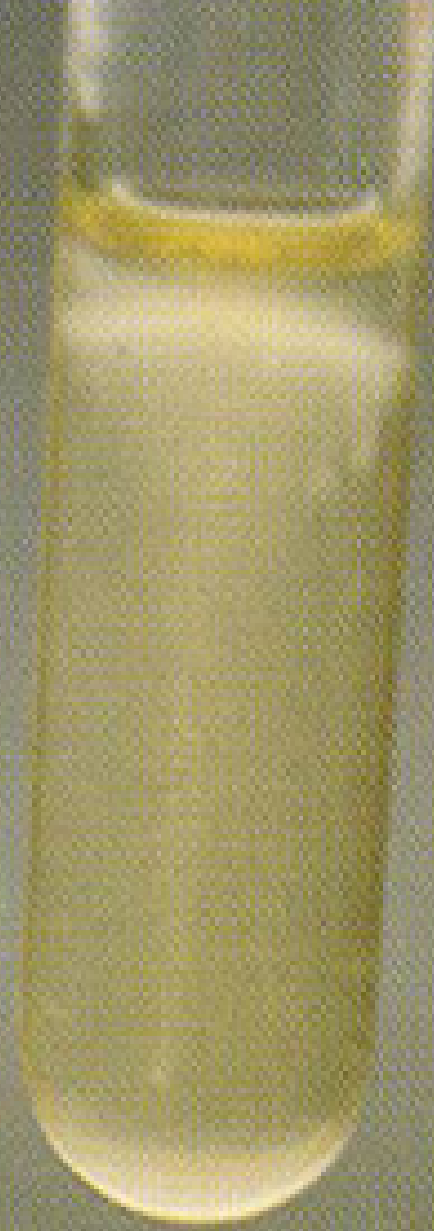
- ▶ Small, Gram-positive bacilli.
- ▶ An aerobic, non spore forming.
- ▶ Widely spread in nature as a facultative intracellular food-borne pathogen.
- ▶ Catalase-positive and Oxidase-negative.
- ▶ Grows well at refrigerator temperature (4°C,-20°C)

Motility

- ◆ Flagella produced at room temperature not at 37°C



- ◆ *Listeria* exhibits a characteristic tumbling motility (umbrella like motility) at room temperature (25°C)



Route of infection:

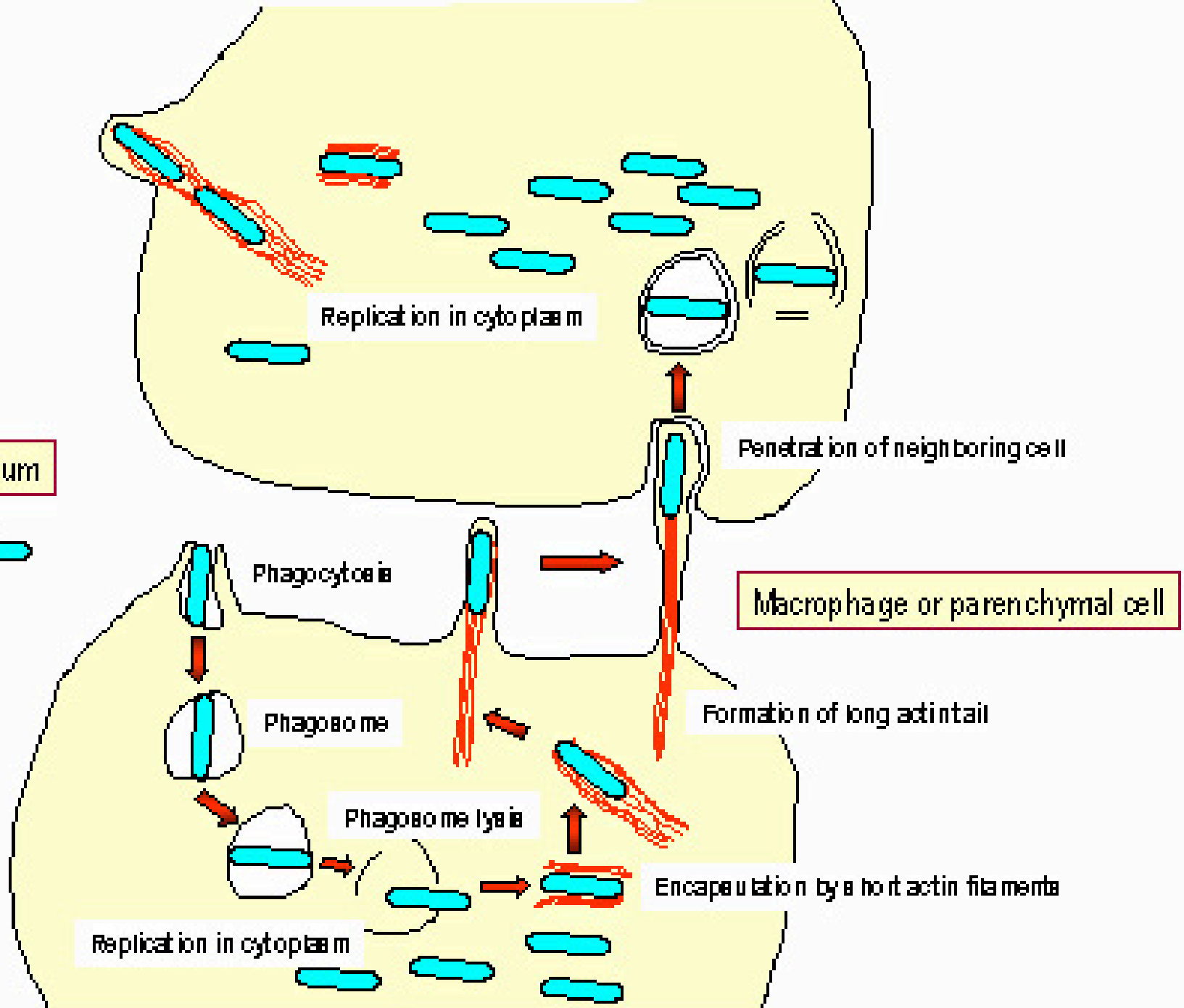
Listeria



食物環境衛生署
Food and Environmental
Hygiene Department

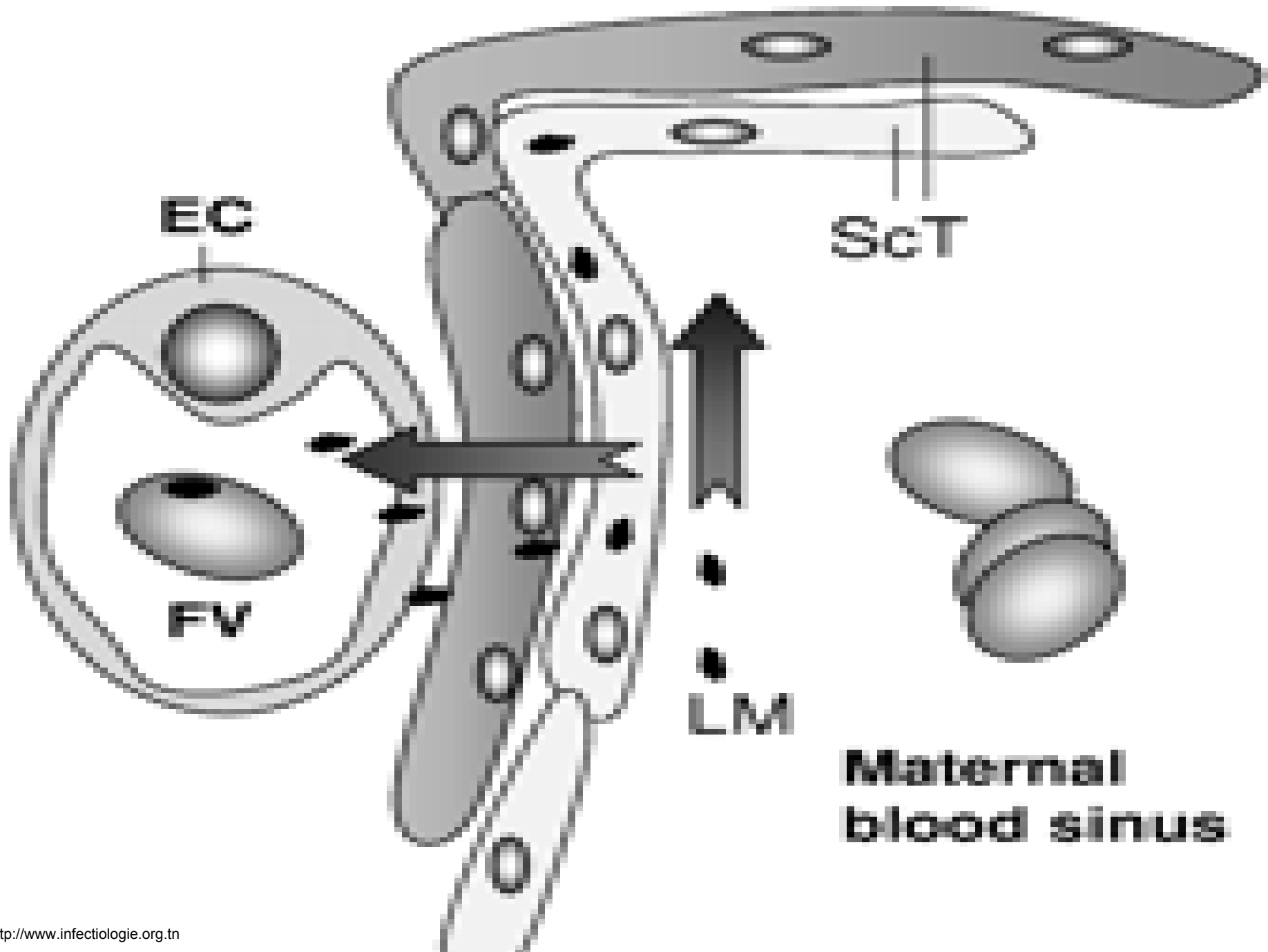
- ▶ *Listeria* is acquired by ingestion, attach and penetrate the intestinal mucosa.
- ▶ The bacteria move within and between the host cells by polymerization of host cell actins at one end of the bacterium ("growing actin tails") that propel the bacteria through cytoplasm.
- ▶ Flagellar motility is important for existence and spread of the bacteria outside the host environment

Bacterium



L. monocytogenes in the gravid uterus:

- ▶ The placenta has a physiological barrier separating fetal blood from the maternal blood
- ▶ *L. monocytogenes* is capable of crossing the placental biological barrier
- ▶ The involvement of In 1A through its interaction with E-cadherin has been recently reported .
- ▶ Listeriosis may occur at all stages of gestation but predominantly during the third trimester.



Risk groups:

- ▶ Pregnant women.
- ▶ Neonates.
- ▶ Old age.
- ▶ Immune compromised patients:
 - HIV patients.
 - Transplant patients.
 - Patients on immunosuppressive drugs.

Clinical manifestation :

I. P : 24 hrs to 91 days.

- Symptoms range from flu-like
- Gastroenteritis is the relatively mild illness experienced by healthy adults.
- septicemia and meningitis .

Gynecological Complications:

- Premature delivery
- Fetal loss ... miscarriage.
- Infection of the newborn
 - Stillbirth
 - Bacteremia
 - Meningitis
 - Encephalitis
 - Acute febrile gastroenteritis
- Death: mainly - neonates and immunocompromised patient

OBJECTIVE OF THE STUDY:

To determine:

1-Epidemiology of listeriosis among Libyan pregnant women.

2-Clinical manifestations of infected cases regarding age, gestational age, history of abortion, type of food taken .

Patients and methods:

122 vaginal swabs taken from Libyan pregnant women at time from 1-4-2009 to 20-7-2010 at age of 20-42 years old with different gravidity ,gestational age and number of abortion.

Study design: cross sectional study.

Study materials: Oxford Agar ,Trypton Soya Agar ,Semisolid Agar, Oxidase test, Catalase test, Gram stain reagents and API listeria.

Materials and Methods

Direct streaking

Indirect streaking



Listeria enrichment broth

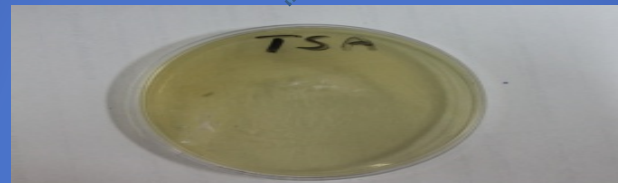


Swabs

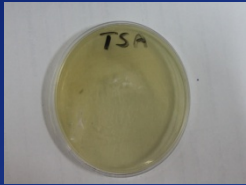
Incubation at 30°C/24hr



Incubation at 30°C/24hr



Incubation at 30°C/24hr



Trypton soya slant

Incubation at 30°C/24hr



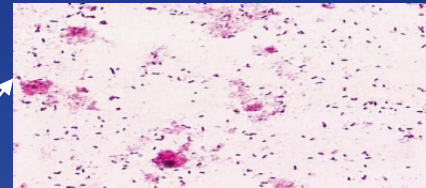
Gram stain

Catalase test

Oxidase test

Motility test (SSA)

Biochemical test (API)



Gram positive rods



Catalase positive



Oxidase negative

Incubation at 25°C/24hr



Incubation at 30°C/24hr





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API identification program

Reference : 34
V1.1 Profile: 3 7 3 0

API LISTERIA

DIM + ESC + α MAN - DARL + DXYL + RHA + MDG + RIB + G1P -
TAG -
=====

GOOD IDENTIFICATION
Listeria ivanovii%id=98.8|T=0.34

NEXT CHOICE

Listeria grayi%id= 1.0|T=0.00

=====

Listeria ivanovii : Number of tests against= 2

L-RHAMNOSE RHA 4% | GLUCOSE-1-PHOSPHATE G1P 91

NEXT CHOICE:

Listeria grayi : Number of tests against= 3

α -MANNOSIDASE α MAN 99% | D-XYLOSE DXYL 1
L-RHAMNOSE RHA 16%

34



Reference : 11
 V1.1 Profile: 3 7 7 0

API LISTERIA

DIM + ESC + αMAN - DARL + DXYL + RHA + MDG + RIB + G1P +
 TAG -

=====

VERY GOOD IDENTIFICATION

Next Choice
 Listeria ivanovii%id=99.9|T=0.58
 Listeria grayi%id= 0.1|T=0.00

=====

Listeria ivanovii : Number of tests against= 1

L-RHAMNOSE RHA 4%

Next Choice:
 Listeria grayi : Number of tests against= 4

α-MANNOSIDASE αMAN 99% | D-XYLOSE DXYL 1
 L-RHAMNOSE RHA 16% | GLUCOSE-1-PHOSPHATE G1P 0



HO

API identification program

API LISTERIA Reference : 103
V1.1 Profile: 3 7 6 1

DIM + ESC + α MAN - DARL + DXYL + RHA + MDG - RIB + GlP +
TAG +
=====

UNACCEPTABLE PROFILE
Listeria ivanovii

NEXT CHOICE
Listeria welshimeri

Listeria ivanovii : Number of tests against= 3

L-RHAMNOSE	RHA	4%	METHYL-D-GLUCOSIDE	MDG	99
D-TAGATOSE	TAG	0%			

NEXT CHOICE:
Listeria welshimeri : Number of tests against= 4

α -MANNOSIDASE	α MAN	96%	METHYL-D-GLUCOSIDE	MDG	99
RIBOSE	RIB	0%	GLUCOSE-1-PHOSPHATE	GlP	0



HO

API identification program

API LISTERIA

Reference : 110
V1.1 Profile: 3 3 3 0

DIM + ESC + α MAN - DARL + DXYL + RHA - MDG + RIB + G1P -
TAG -

=====

GOOD IDENTIFICATION

Next CHOICE
Listeria ivanovii%id=96.5|T=0.68
Listeria seeligeri%id= 3.3|T=0.25

Listeria ivanovii : Number of tests against= 1

GLUCOSE-1-PHOSPHATE G1P 91%

NEXT CHOICE:

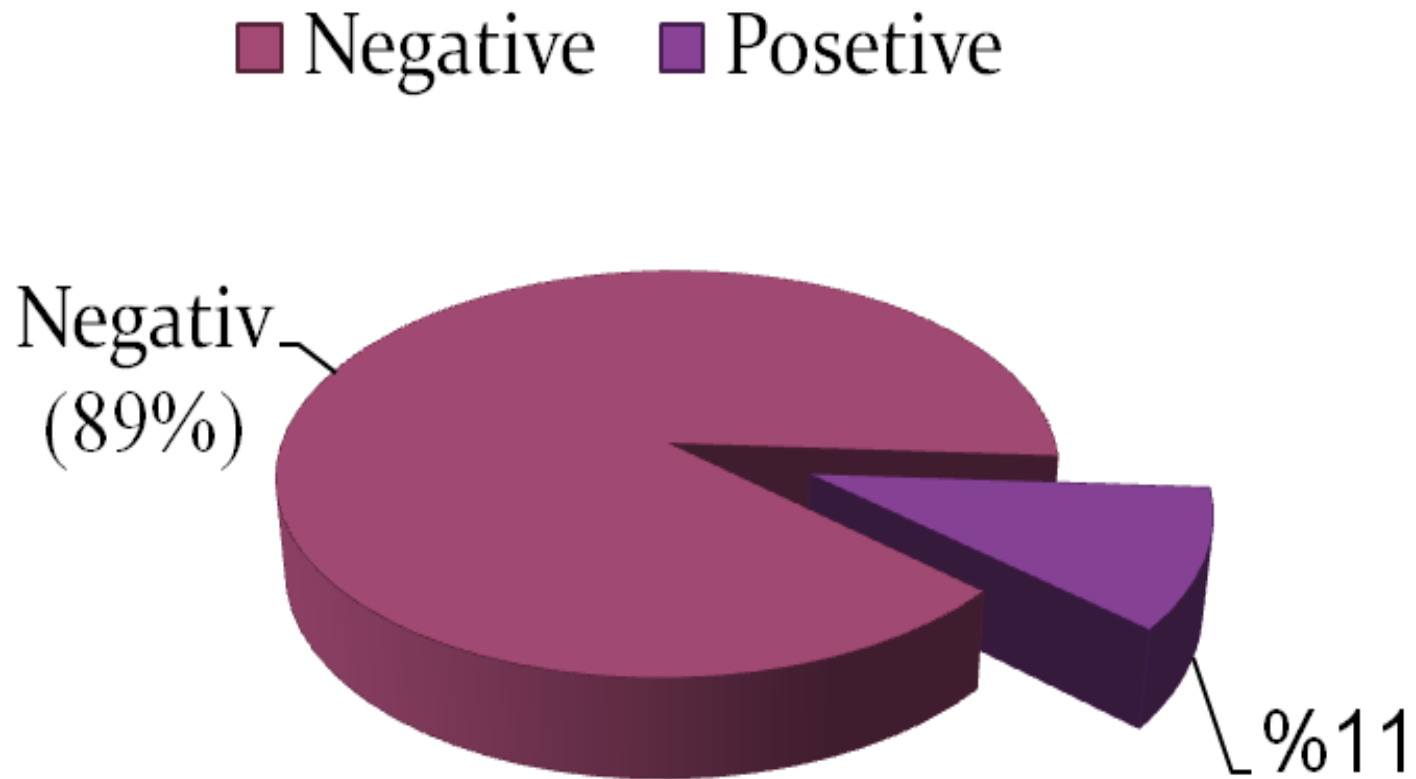
Listeria seeligeri : Number of tests against= 1

RIBOSE RIB 0%

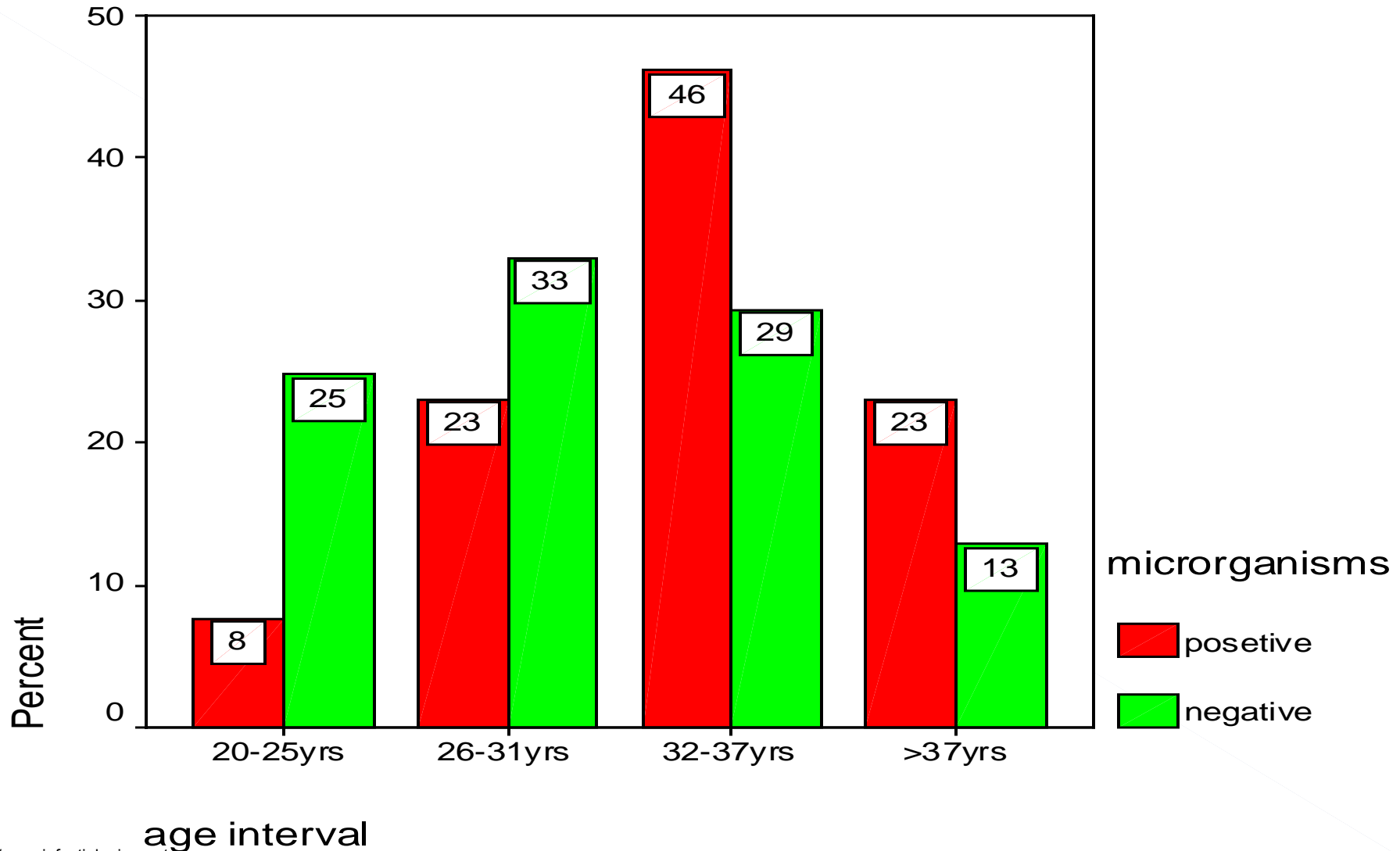


RESULTS

The percentage of positive samples:



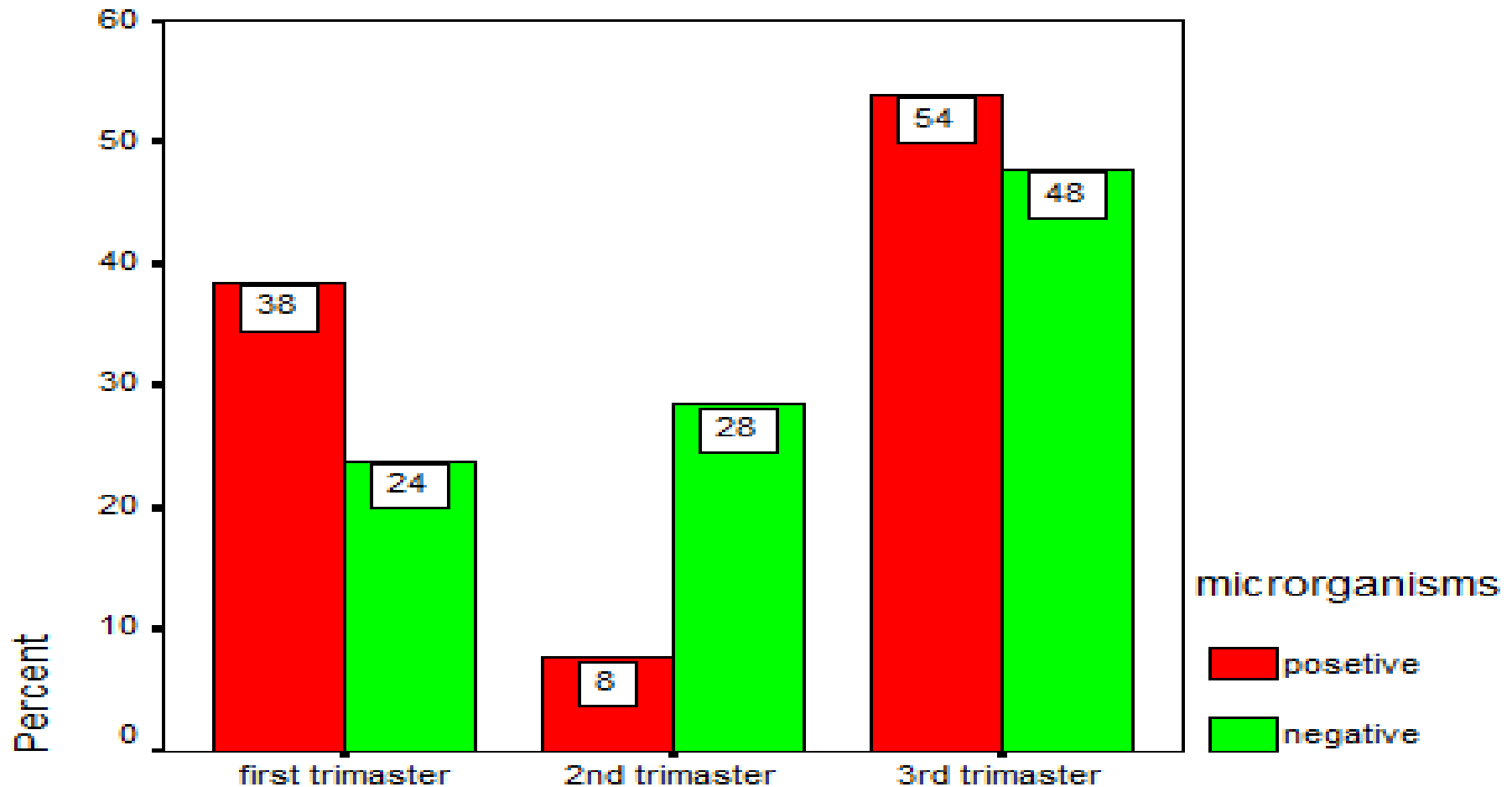
The relation between the age and the microbiological result studied



Relationship between age and Microbiology results

Age	Listeria Species		Total
	Positives	Negatives	
20-25 yrs	1 3.6%	27 96.4%	28 100.0%
26-31yrs	3 7.7%	36 92.3	39 100.0%
32-37yrs	6 15.8%	32 84.2%	38 100.0%
> 37yrs	3 17.6%	14 82.4	17 100.0%
Total	13 10.7	109 89.3%	122 100.0%

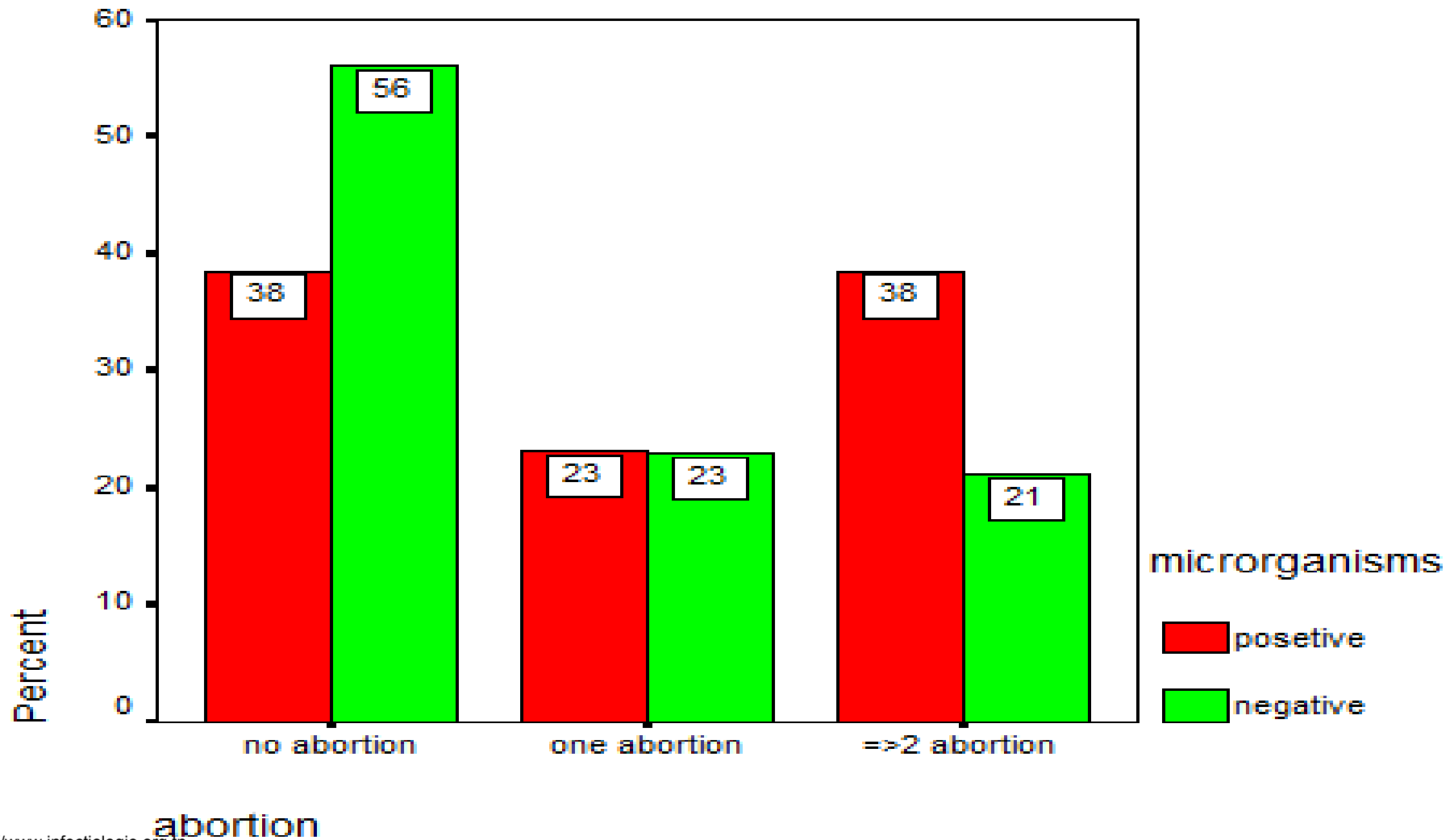
The relation between the gestational age of pregnant women at sampling and the microbiological result.



Relationship between gestational age at the sampling time and Microbiology results.

	Microbiology		Total
	Positives	Negatives	
First trimester	5 16.1%	26 83.9%	31 100.0
2 nd trimester	1 3.1%	31 96.9	32 100.0
3 rd trimester	7 11.9	52 88.1	59 100.0
Total	13 10.7	109 89.3%	122 100.0

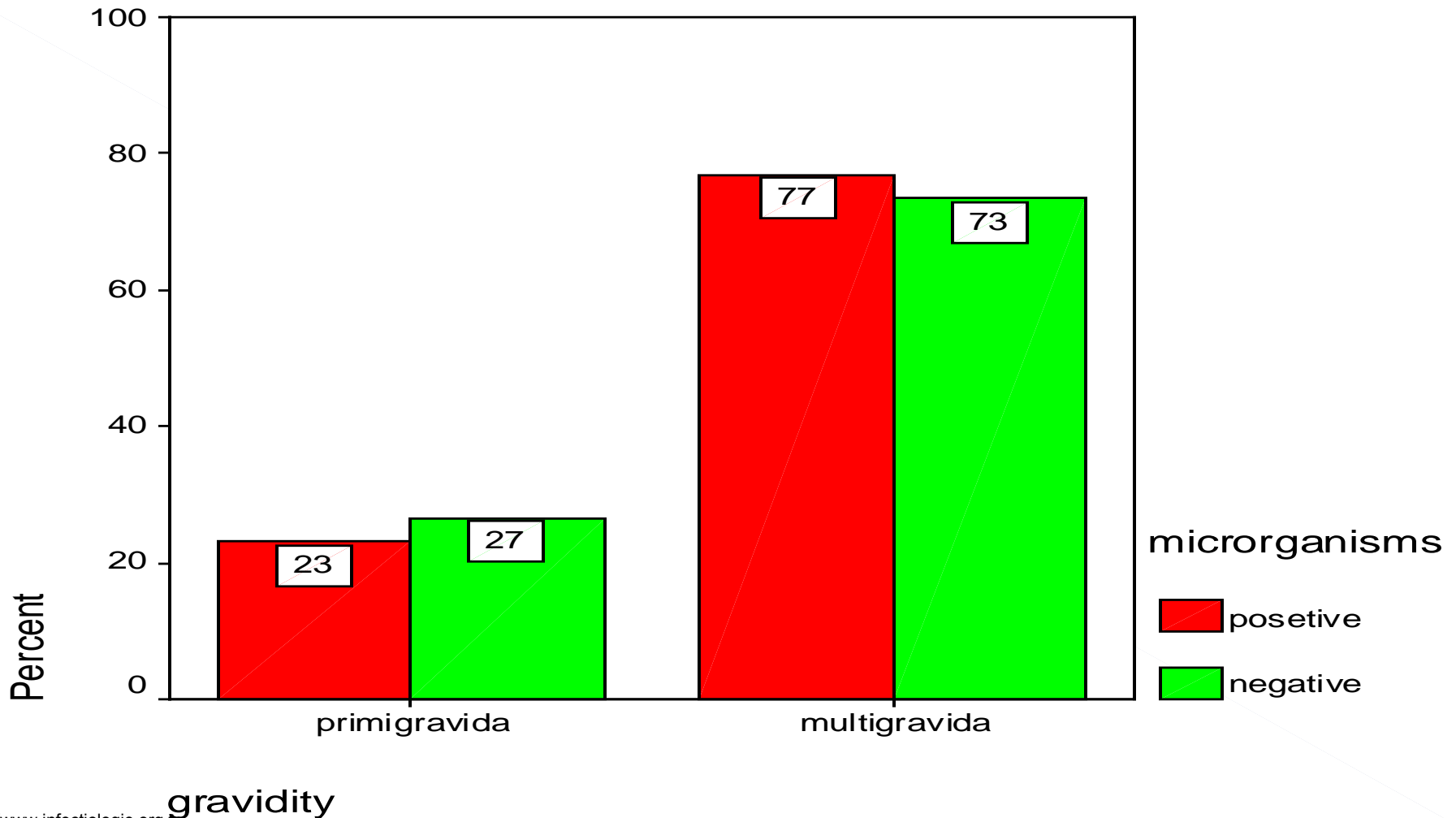
The relation between the number of abortion of pregnant women at sampling and the microbiological result.



The relation between the number of abortion of pregnant women at sampling and the microbiological result.

Number of abortion	Microorganisms		Total
	Positives	Negatives	
No abortion	5 7.6%	61 92.4%	66 100.0
One abortion	3 10.7%	25 89.3%	28 100.0
≥ 2abortion	5 17.9%	23 82.1%	28 100.0%
	13 10.7%	109 89.3%	122 100.0%

Relationship between gravidity of pregnant women at sampling time and Microbiology results.



The relation between the gravidity of pregnant women at sampling and the microbiological result.

Gravidity	Microorganisms		Total
	Positives	Negatives	
Primigravida	3 9.4%	29 90.6%	32 100.0%
Multigravida	10 11.1%	80 88.9%	90 100.0%
Total	13 10.7%	109 89.3%	122 100.0%

Distribution according to possible dietary source

Possible dietary source	Microorganisms		Total
	Positives	Negatives	
and sea food Not taken milk, cabbage	0 0%	6 100/0%	6 100.0%
Milk	0 0%	8 100.0%	8 100.0%
cabbage	0 0%	1 100.0%	1 100.0%
Sea food	3 30.0%	7 70.0%	10 100.0%
Milk+ cabbage	0 0%	6 100.0%	6 100.0%
Milk+ sea food	0 0%	8 100.0%	8 100.0%
Cabbage+ sea food	0 0%	12 100.0%	12 100.0%
Milk+ sea food+ cabbage	10 14.1%	61 85.9%	71 100.0%
Total http://www.infectiologie.org.tn	13 10.7%	109 89.3%	122 100.0%

CONCLUSIONS

- Listeriosis is found to be a common pathogen at third trimester among pregnant women
- Prevalence of infection was 11%, associated mostly with recurrent abortion
- Sea food may be a common source of Listeria

RECOMMENDATIONS

- Listeria has to be considered as an - important pathogen during pregnancy
- Clinical and diagnostic tests to be implemented in obstetric practice

RECOMMENDATIONS

- Longitudinal studies on large samples are - need .
- Further studies to establish the relation between vaginal listeriosis and neonatal out come.
- Food awarness has to be highlighted particularly among pregnant women

Thank you