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المملكة العربية السعودية

Kingdom of Saudi Arabia

Seroprevalence of Chlamydia trachomatis, cytomegalovirus, herpes simplex virus 1&2 in Saudi women with normal and abnormal early pregnancy: A pilot study



Sexually transmitted diseases

- Major health problem under diagnosed world wide
- Incidence rise in females more than males, especially in reproductive age
- *Several organisms have been identified*

  WHO: 27 million infected in Middle East

  *WHO:*Global incidence and prevalence of selected curable sexually transmitted infections – 2012

- *Major cause of complications*
  - Maternal
  - Neonatal

Maternal Reproductive Complications of STIs

- Pelvic inflammatory diseases (PID)
- Chronic pelvic pain
- Miscarriage
- Ectopic pregnancy (EP)
- Infertility

Untreated STIs in pregnant women

may result in

- Fetal wastage
- Stillbirths
- Low birth weight
- Eye damage
- Lung damage
- Congenital abnormalities

Neonatal Complications of STIs

- *Chlamydia trachomatis*
  - Pneumonitis
  - Conjunctivitis
- Herpesviridae viruses
  - Serious Neurological manifestations

- STIs are common, but difficult to track.

- Many people with these infections do not have symptoms and remain undiagnosed.

- Diseases diagnosed frequently but not reported and counted.

- Most of the published data on prevalence and incidence of STIs come from developed countries.

Prevalence in KSA

- Information about STIs in Islamic countries, where non-marital sex and homosexuality are prohibited by religion, is notably limited.

- The appropriate preventive strategies adopted by SA. that conform to the Islamic rules and values were contributed in limit the spread of STIs

- Incidence of STIs in SA is limited

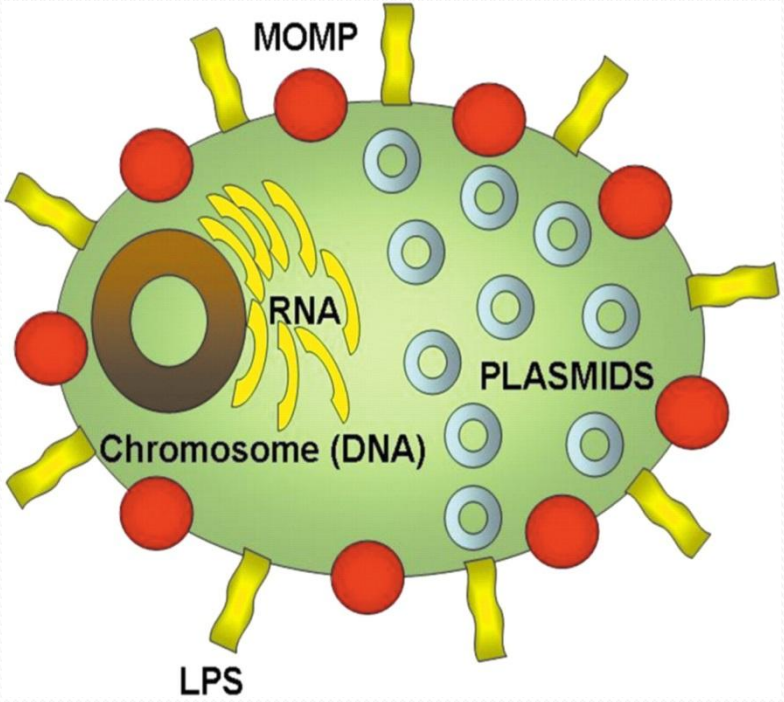
- Detailed information on human immunodeficiency virus (HIV) in Saudi Arabia (SA) was published for the first time in 2004.

Prevalence in KSA

- Very limited number of studies
- Majority by serology diagnosis
- Majority in normally pregnant women
- None on abnormal early pregnancy
- Seroprevalence in normal pregnancy (IgG antibodies)
  - *C. Trachomatis* (4-21%) from different regions
  - CMV (about 90%)
  - HSV1 (80-90%)
  - HSV-2 (7-75%)

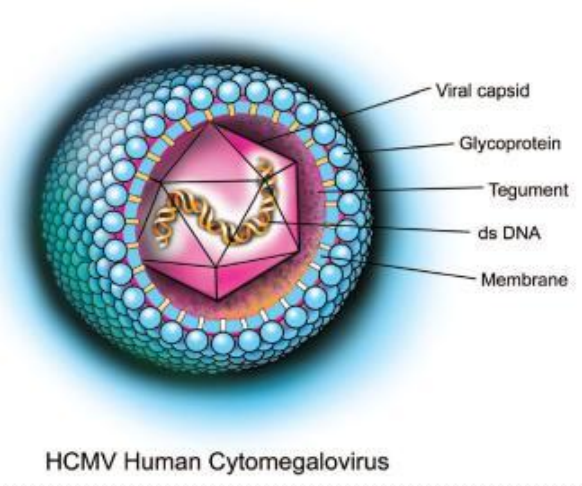
Chlamydia Trachomatis

- Gram Negative bacteria
- Obligatory intracellular
- Most common STI
- Majority patients are asymptomatic



Cytomegalovirus

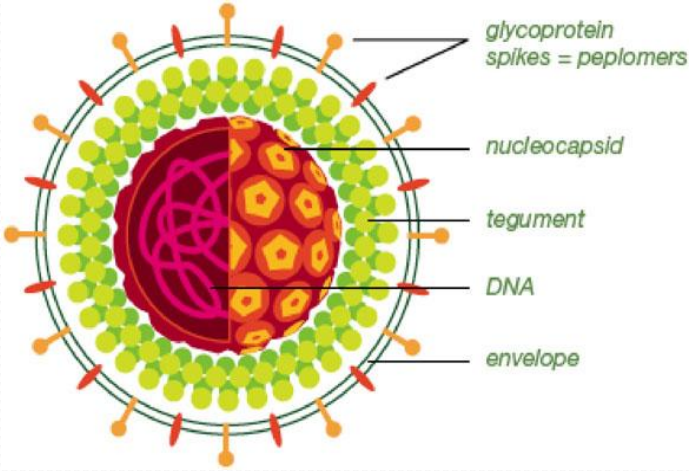
- Herpes viridae family
- Transmission through body fluids
- Infection
  - Acute
  - Chronic
  - Reactivation
- Several Maternal & Neonatal Complications



HCMV Human Cytomegalovirus

Herpes Simplex virus 1&2

- Herpes viridae family
- Latent infection
- HSV-1
  - Mainly oro-labial (Cranial nerves)
- HSV-2
  - Mainly genital (Dorsal spinal ganglia)
- Abnormal site of infection
  - Mainly due to oral sex



Common Diagnostic Methods

- Serology
  - *C. Trachomatis* (IgM, IgG & IgA)
    - IgG = Associated with reproductive complications
  - Herpes viridae viruses
    - IgM = Acute infection
    - IgG = Chronic/Non-active
    - IgM + IgG = Re-exposure/Re-activation
- Nucleic Acid Amplification Tests (PCR)
  - All organisms (Current/Persistent infection)

Research Questions

Are *C. trachomatis*, CMV, HSV-1&2 associated with abnormal early pregnancy?

- **What is the seroprevalence in:**
  - **Miscarriage?**
  - **Ectopic pregnancy?**
  - **Normal pregnancy?**

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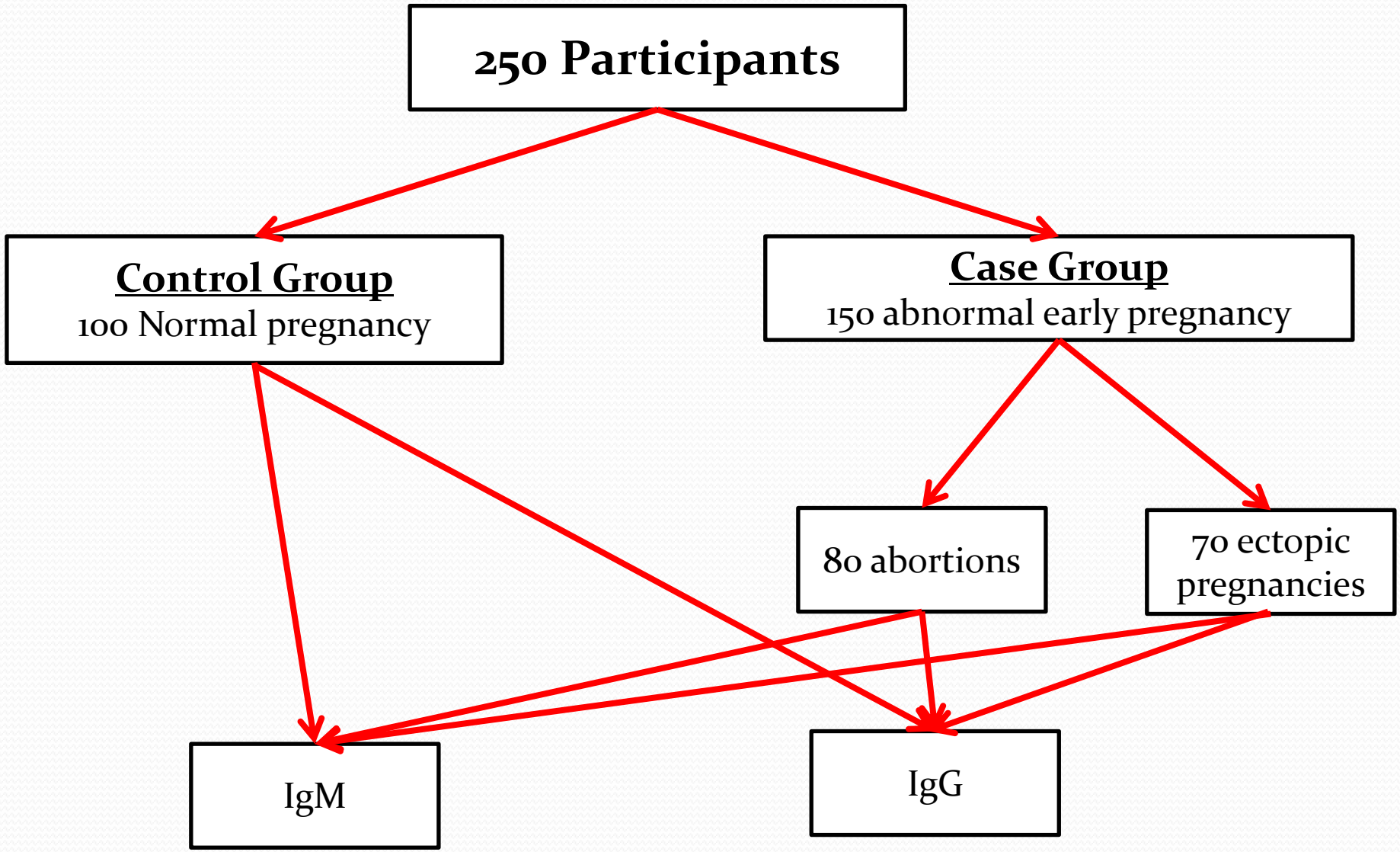
Seroprevalence of Chlamydia trachomatis, Cytomegalovirus, Herpes simplex virus 1&2 in Saudi women with normal and abnormal early pregnancy: A pilot study

SARAH ABDULLAH BATWA[1], BASSEM REFAAT[2] AHMED MOHAMMED ASHSHI[2] AND ADEL GALAL EL-SHEMI[2]

Materials and methods



Study Design (Case–Control)



Inclusion & Exclusion Criteria

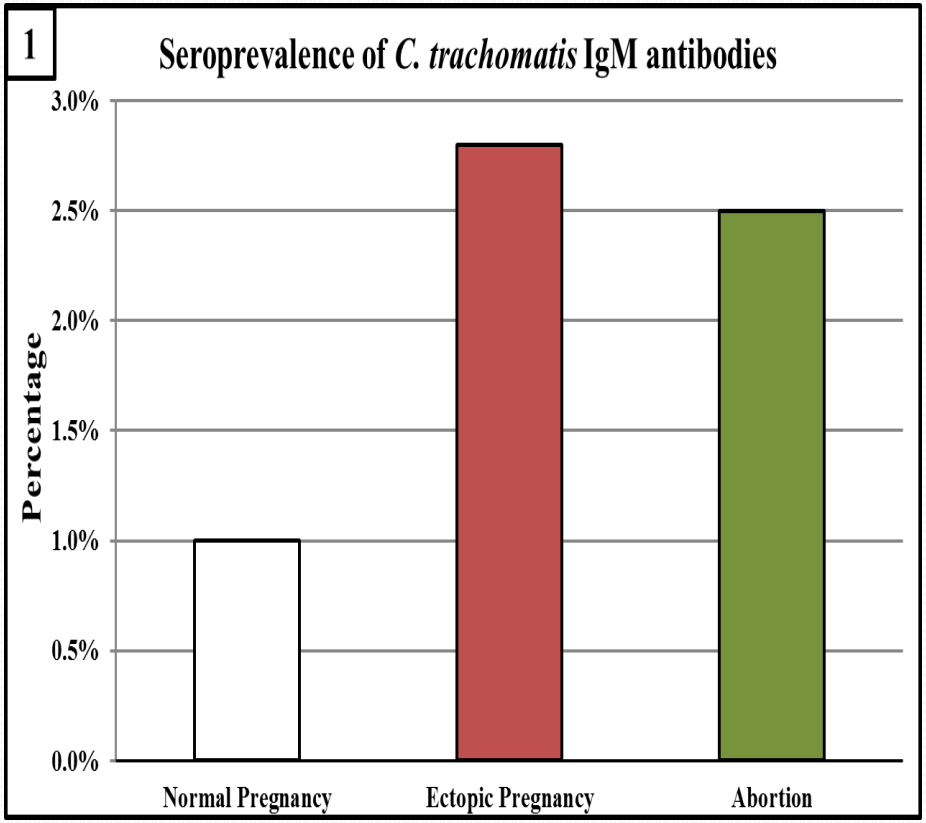
Inclusion Criteria	Exclusion Criteria
Saudi	Non-Saudi
Patient age ≥ 18 and < 40 years.	Patient age < 18 or > 40 years.
Spontaneous pregnancy	Pregnancy following assisted conception
Singleton pregnancy	Multiple/heterotopic pregnancy
Spontaneous abortion	Induced abortion

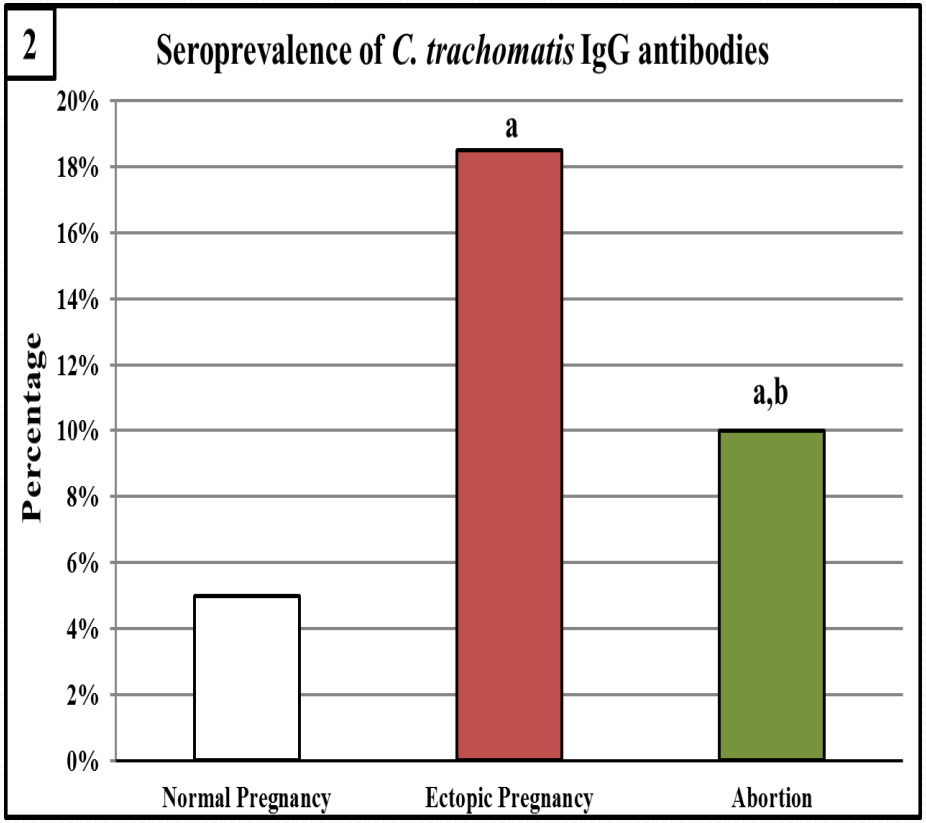
Methods

- ELISA to measure serum IgM & IgG antibodies:
  - *C. Trachomatis*
  - CMV
  - HSV1
  - HSV2

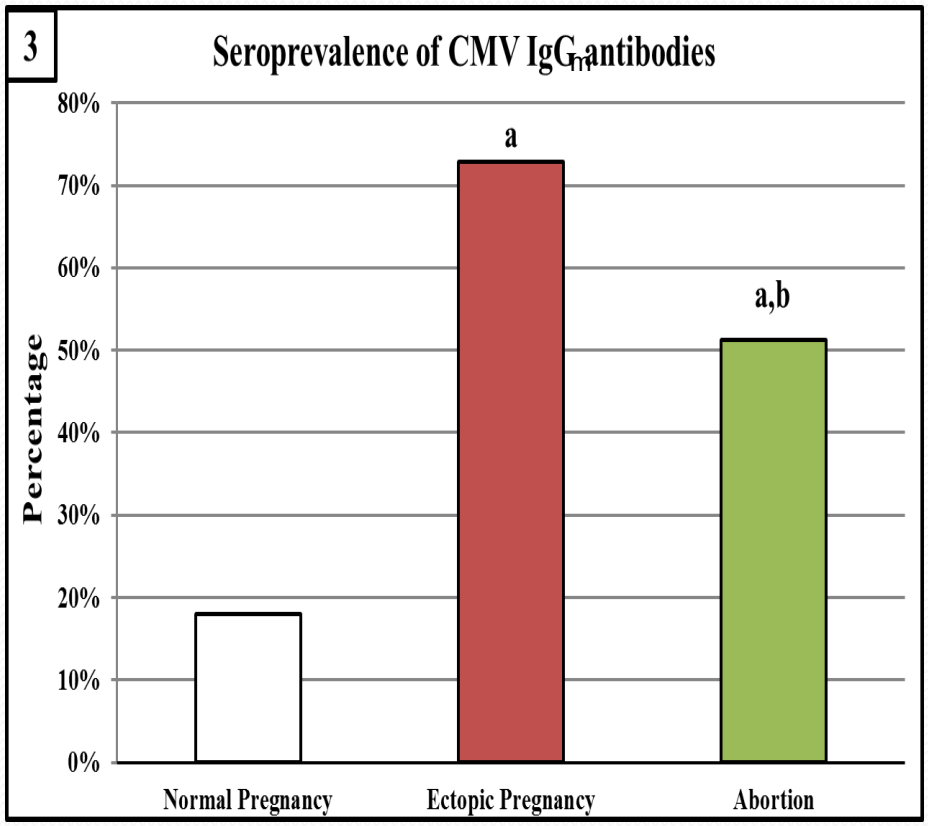

RESULTS

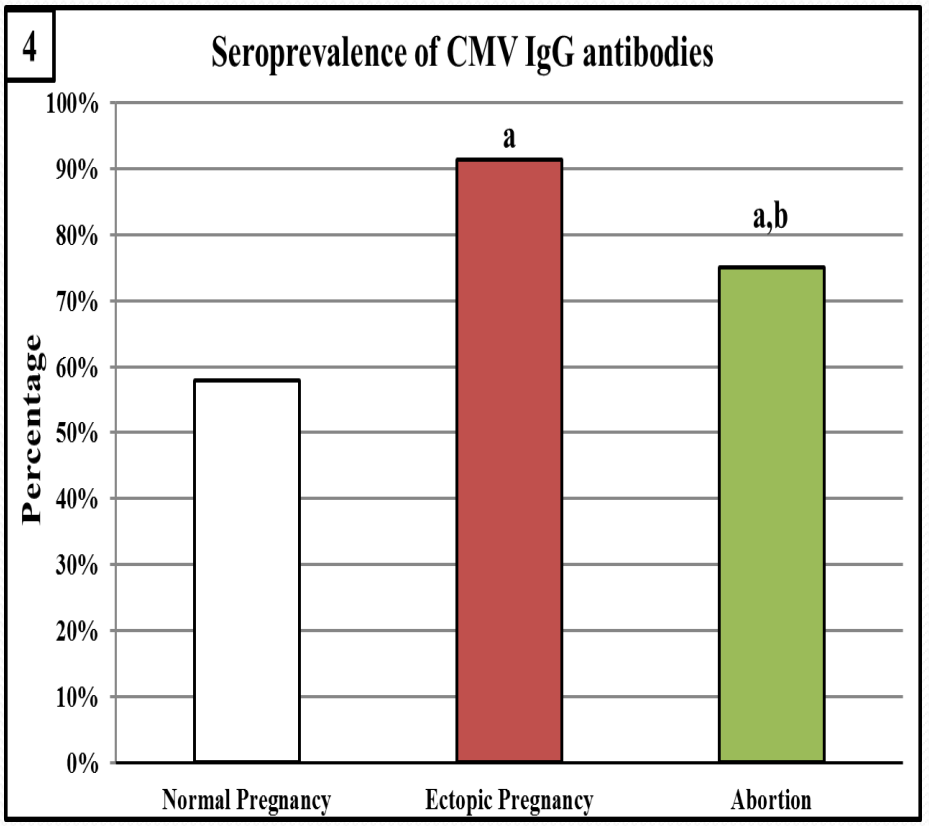
1- *C. Trachomatis* (a = p < 0.05 compared to normal pregnancy and b = p < 0.05 compared to EP groups).



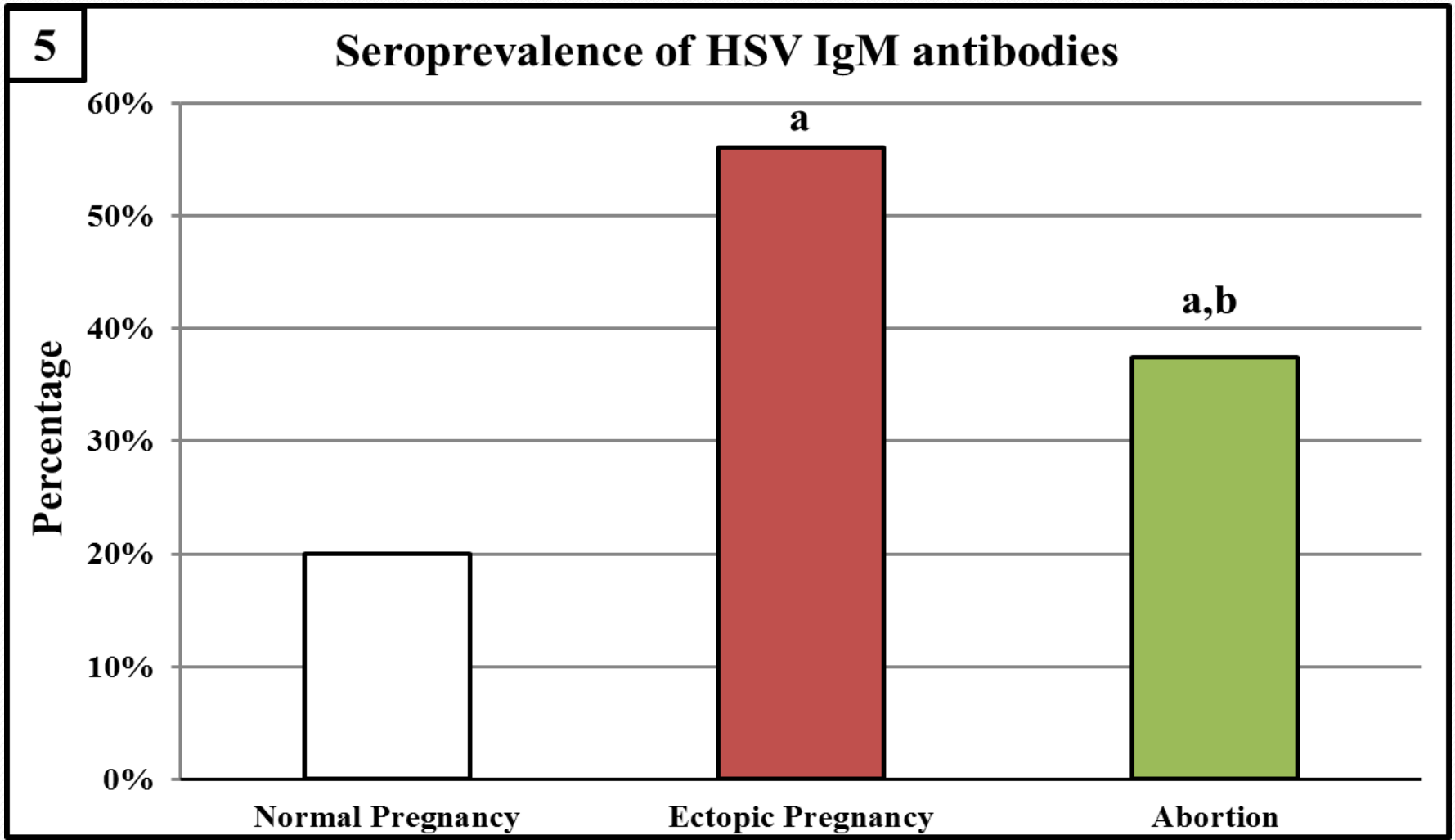


2- CMV (a = p < 0.05 compared to normal pregnancy and b = p < 0.05 compared to EP groups).

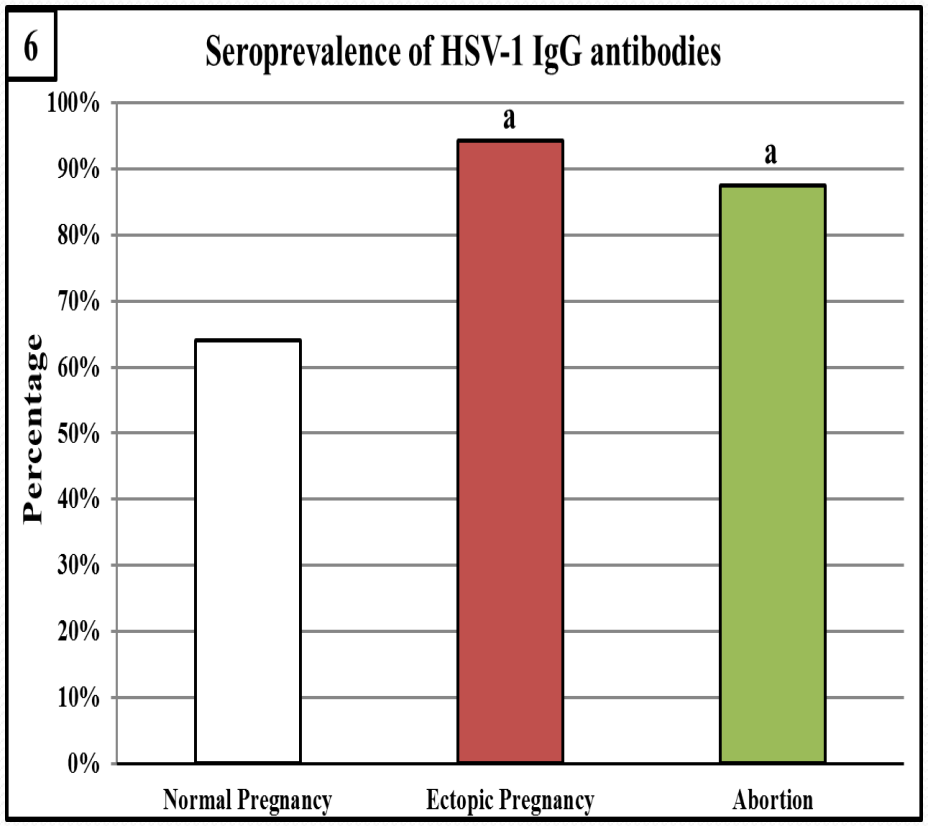


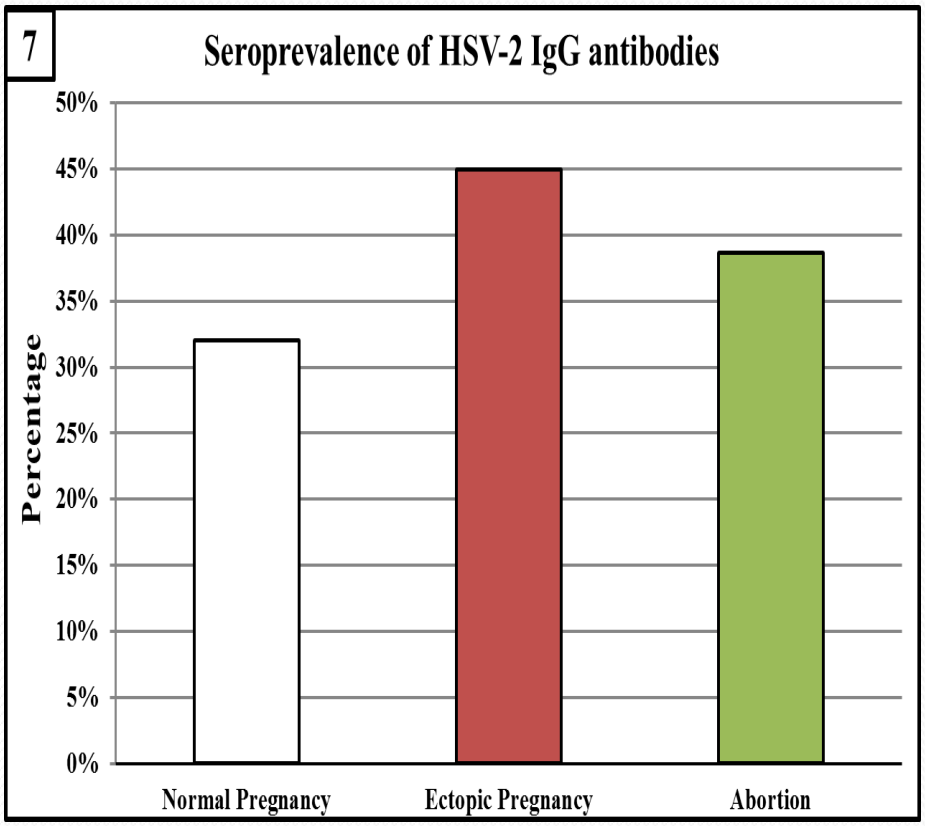


3- HSV IgM (a = p < 0.05 compared to normal pregnancy and b = p < 0.05 compared to EP groups).



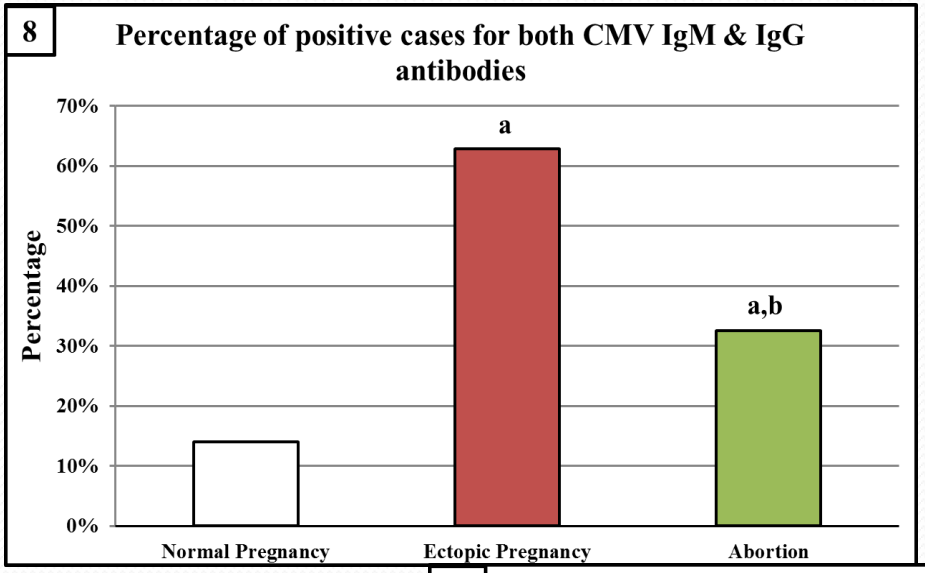
4- HSV IgG (a = p < 0.05 compared to normal pregnancy and b = p < 0.05 compared to EP groups).



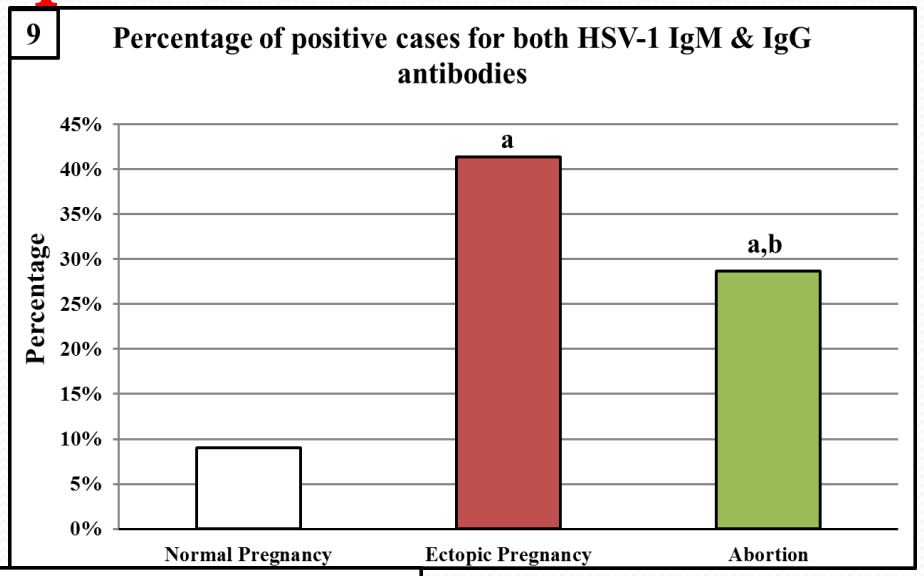


5- Percentage of positive cases for both IgM & IgG antibodies for Herpesviridae viruses

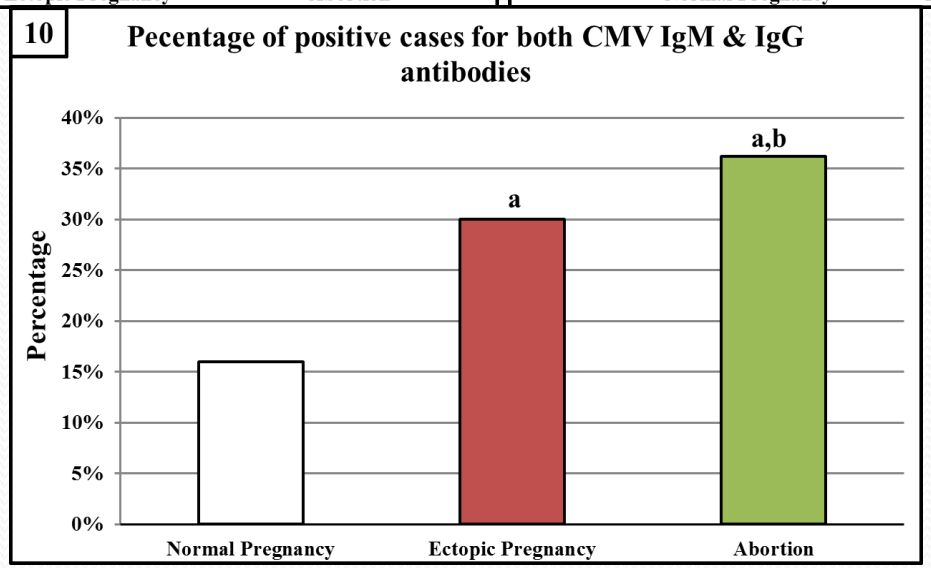
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Conclusions

- *C. trachomatis*, CMV, HSV could represent a major risk factor for adverse pregnancy outcome during the first trimester in Saudi females

- The High number of positive cases for both IgM & IgG against CMV & HSV suggests that the development of abnormal early pregnancy could be associated with re-exposure/ reactivation of the viral infection.

- The high prevalence of IgM antibodies against CMV & HSV in the normal pregnancy group suggests risk for vertical spread leading to neurological disabilities

Future Work

- Confirmation of serological results by NAATs
- Effect(s) of STIs on the expression of receptivity biomarkers Fallopian tube/endometrium tissues



THANKS FOR YOUR ATTENTION

