

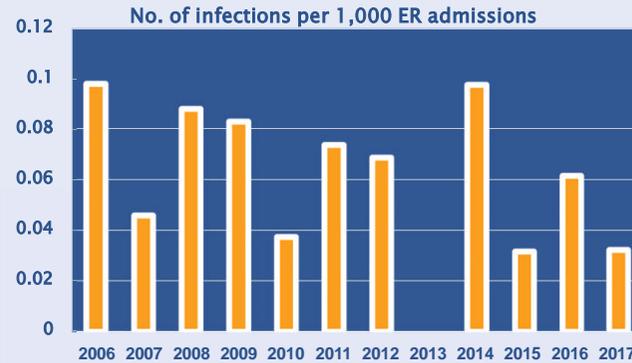
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Introduction

- ❖ Infections during pregnancy and labor are common.
- ❖ *H. influenzae* is a relatively rare pathogen as a cause of infections during pregnancy, but epidemiologic studies show that there might be increasing incidence in recent years among this population.
- ❖ Obstetric *H. Influenzae* infections might cause severe maternal and neonatal morbidity or mortality and poor pregnancy outcomes.
- ❖ The epidemiology of *H. influenzae* infections has dramatically changed, following the introduction of a successful vaccine against type b strains, almost 3 decades ago.
- ❖ The Hib vaccine may have influenced the prevalence of *H. influenzae* serotypes since according to recent studies, most of the obstetric *H. influenzae* infections were due to non type b, mostly nontypeable *H. influenzae*.
- ❖ Due to scarce information about the epidemiology of obstetric *H. Influenzae* infections, we conducted an epidemiological analysis, in order to determine the risk factors and outcomes of these infections among maternal population.

Methods

- ❖ A retrospective matched case-control analysis was conducted at Assaf Harofeh Medical Center, Israel, for calendar years 2006–2017.
- ❖ Hospitalized women (>18 years) with obstetric *H. Influenzae* infections (cases) were matched (by trimester & calendar year) to 3 pregnant controls (3:1 ratio).
- ❖ Extensive epidemiological data was extracted from all available records.
 - ❖ Neonatal data was also retrieved and analyzed.
- ❖ A descriptive analysis and univariable analysis was conducted for risk factors and outcomes.



Results

- ❖ 19 cases of maternal *H. Influenzae* infections and 57 matched controls were eligible for inclusion.
- ❖ Most (89%) of *H. Influenzae* infections occurred in the first two trimesters of pregnancy.
- ❖ 63% of all cases had Invasive *H. Influenzae* infections coupled with bacteremia.
- ❖ Serotyping and biotyping of *H. Influenzae* infections were available for 13 cases
 - ❖ All *Haemophilus* isolates were nontypeable.
 - ❖ Biotype III was predominant, with 6 isolates (46%). The remaining isolates were: biotype I (n=3), biotype II (n=3) and biotype V (n=1).
- ❖ 74% of pregnancies with *H. Influenzae* infections were miscarried.
 - ❖ Among neonates who survived, prematurity rate was 60%.
- ❖ Risk factors for maternal *H. Influenzae* infections were: pregnancy conceived with IUD, PROM, and elevated maternal infection severity indices: tachycardia, fever, leukocytosis, elevated CRP and anemia.
- ❖ Outcomes of cases vs. controls:
 - ❖ longer length hospitalization, lower birth weight and a higher rate of early neonatal sepsis.
 - ❖ No maternal or neonatal fatality cases.

Maternal *H. influenzae* infection case list

Age (years)	Gestational week	<i>H. Influenzae</i> serotype	<i>H. Influenzae</i> biotype	Source of isolation	Outcome
36	27	Nontypeable	Biotype V	Blood, placenta	Urgent cesarean section, prematurity, early neonatal sepsis
33	37	Nontypeable	Biotype I	Blood	Induced delivery
30	38	Nontypeable	Biotype III	Blood	Induced delivery
38	15	Nontypeable	Biotype III	Blood	Miscarriage
29	14	Nontypeable	Biotype III	Blood	Miscarriage
20	12	Nontypeable	Biotype II	Blood, genital	Miscarriage
23	8	Nontypeable	Biotype I	Blood	Miscarriage
27	11	Nontypeable	Biotype III	Blood	Miscarriage
30	16	Nontypeable	Biotype II	Blood, placenta	Miscarriage
27	15	Nontypeable	Biotype I	Blood, genital	Miscarriage
30	13	Nontypeable	Biotype III	Blood, placenta	Miscarriage
37	28	N/A	N/A	Amniotic fluid	Urgent cesarean section, prematurity, early neonatal sepsis
26	24	Nontypeable	Biotype III	Placenta	Prematurity, early neonatal sepsis
40	8	N/A	N/A	Genital	Miscarriage
36	14	N/A	N/A	Placenta	Miscarriage
30	14	N/A	N/A	Genital, placenta	Miscarriage
27	17	N/A	N/A	Placenta	Miscarriage
30	19	N/A	N/A	Genital	Miscarriage
30	13	Nontypeable	Biotype II	Blood	Miscarriage

Conclusions

- ❖ *H. Influenzae* infections in pregnancy are associated with higher maternal and neonatal morbidity rates.
- ❖ Nontypeable *H. influenzae* was the only serotype isolated from women with obstetric *H. influenzae* infections in this study, with biotype III predominance.
- ❖ Further research is needed in order to examine the association between pregnancy with IUD to obstetric *H. influenzae* infections.
- ❖ Following previous studies and this study, there is a need to explore the cost-effectiveness of comprehensive intervention to screen for *H. Influenzae* carriage during pregnancy.