

Abstract

Group B *Streptococcus* (GBS) is a leading cause of perinatal infections. GBS can be found in the genitourinary and gastrointestinal tract of up to 40% of pregnant women, being the main source for transmission to newborns. Since the COVID-19 pandemic onset, changes in the personal hygiene care and in the frequency of antibiotic usage may have contributed to modifications in GBS occurrence in anovaginal microbiota. Anovaginal samples recovered from pregnant women attended at a maternity in Rio de Janeiro, Brazil were analyzed considering scenarios before (January 2019 to March 2020; 521) and during (May 2020 to December 2021; 525) pandemic. Anovaginal specimens were streaked onto chromogenic media after a pre-enrichment step and colonies were identified by MALDI-TOF MS. GBS strains had susceptibility profiles determined according to CLSI and serotypes were determined by latex agglutination. Sociodemographic and clinical data of pregnant women were collected and analyzed. GBS was detected in 9.8% of anovaginal samples. Considering scenarios before and during pandemic, GBS colonization rate significantly decreased after pandemic onset (13.8% before vs 6.3% after; $p < 0.0001$). No difference ($p > 0.05$) in clinical and sociodemographic data of the study population was detected between two scenarios, indicating that changes in GBS incidence were not related to modifications in population profile. Serotype Ia was the most prevalent (42.3%), followed by serotypes V (24.4%), II (19.2%), III (10.2%), Ib (2.6%) and VIII (1.3%). Serotype Ia was more common pre-pandemic, while serotypes Ib, III and V were more frequent, and serotype VIII was only detected during pandemic. All strains were susceptible to penicillin, vancomycin and levofloxacin, while 81.3%, 16% and 5.3% were non-susceptible to tetracycline, erythromycin and clindamycin respectively, and no difference ($p > 0.05$) between two scenarios was detected. Current clinical practices and personal habits related to COVID-19 pandemic onset may have impacted anovaginal microbiota, leading to GBS colonization rate reduction and different distribution of serotypes during pandemic among GBS colonizing pregnant women in Rio de Janeiro. These results indicate the need for continuous surveillance of GBS among pregnant women in Brazil.

Background and aims

- Group B *Streptococcus* (GBS) is recognized as a leading cause of perinatal diseases since the 1960's.
- Pregnant women are the main source for newborn colonization since this microorganism can be found in the anovaginal tract of up to 40% of this population.
- Modifications in personal hygiene care and in the frequency of antibiotic usage due to the onset of COVID-19 pandemic may also contribute to changes in the occurrence of GBS in the human microbiota.

Here we determined GBS anovaginal colonization rates among pregnant women in Brazil considering scenarios before and after the onset of COVID-19 pandemic.

Methods

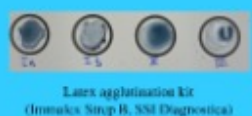
Study population and clinical samples

1046 anovaginal specimens were obtained from pregnant women between the 35th and 37th gestational weeks attended at the Teaching Maternity of UFRJ during routine antenatal care.

Specimens were collected using a combined swab method according to CDC recommendations (2010).

Clinical samples were divided into pre- (January 2019 to March 2020; $n=521$) and post-onset (May 2020 to December 2021; $n=525$) of COVID-19 pandemic.

Detection, isolation and characterization of GBS



Results

- ✓ GBS was detected in 9.8% of anovaginal samples.
- ✓ GBS colonization rate significantly decreased after pandemic onset (13.8% before vs 6.3% after; $p < 0.0001$).
- ✓ No difference ($p > 0.05$) in clinical and sociodemographic data of the study population was detected between two scenarios.
- ✓ Serotype Ia was the most prevalent, followed by serotypes V, II, III, Ib and VIII (Figure 1).

Results

- ✓ Although serotype distribution was different between the two periods analyzed, no difference ($p > 0.05$) was detected (Figure 2).
- ✓ Non-susceptibility was detected for tetracycline, erythromycin and clindamycin (Figure 3).

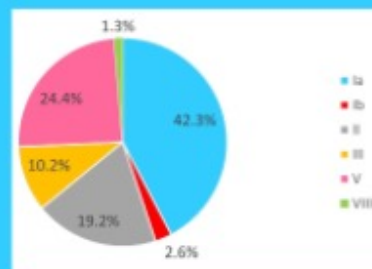


Figure 1: Overall distribution of GBS Serotypes

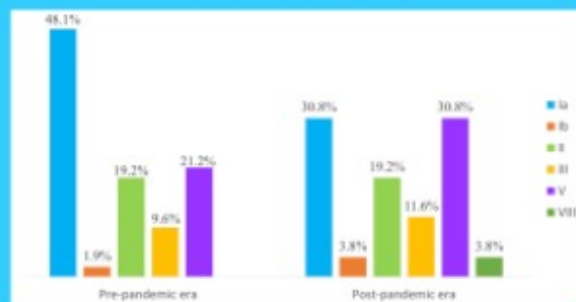


Figure 2: Distribution of GBS serotypes before and after the onset of COVID-19



Figure 3: Susceptibility profile of GBS strains

Results

- ✓ Despite increasing trends of tetracycline and erythromycin resistance during pandemic, no difference ($p > 0.05$) between different scenarios was observed (Figure 4).

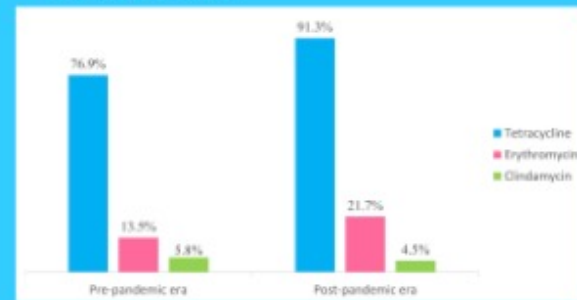


Figure 4: GBS resistance analyzing before and after the onset of COVID-19

Conclusions

- After the onset of the COVID-19 pandemic, GBS colonization rate has decreased among pregnant women in Brazil;
- Novel habits in personal hygiene and clinical practices related to the COVID-19 pandemic may have impacted the anovaginal microbiota of pregnant women in Brazil, leading to GBS colonization rate reduction and different serotype distribution;
- These results highlight the need for continuing GBS surveillance within this special population in Brazil.

References

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Acknowledgments

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