



The Brazilian Journal of INFECTIOUS DISEASES

www.elsevier.com/locate/bjid



Letter to the Editor

Group B streptococcus neonatal infection in an intensive care unit in Brazil: high fatality and missed opportunities for antibiotic prophylaxis

Dear Editor,

Group B *Streptococcus* (GBS) or *Streptococcus agalactiae* is the main cause of death from early-onset neonatal sepsis. Because of its fulminant clinical presentation, even with the timely use of antibiotics and clinical support in the intensive care unit, the fatality rate is high and the neonatologist can do little to prevent death. In developed countries, such as the United States, the incidence of GBS infection reduced from 1.7 cases per 1000 live births in the early 1990s to 0.34 cases per 1000 live births after the implementation of antibiotic prophylaxis during labor.¹

In Brazil, there is no national recommendation for antibiotic prophylaxis during labor to prevent GBS neonatal infection. The information about GBS incidence derives from two studies published a decade ago and ranged between 0.39 and 1.0 per 1000 live births.^{2,3} A more recent study that analyzed data from 2007 to 2011 reported a GBS incidence of 0.51 per 1000 live births.⁴ We describe the cases of GBS infection among infants admitted to a public neonatal intensive care unit (NICU) in Brasilia, during 2012 and 2013. The NICU has 40 beds and it is a regional reference for very low birth weight babies (<1500 g) and neonatal surgery.

We identified positive blood cultures for GBS using the microbiology laboratory database. Blood culture obtained from each patient was submitted to an automated continuous monitoring system for bacterial detection (Bactec fluorescent series system® Becton Dickinson Microbiology System). The *Streptococcus* genus was identified by Gram stain, colony morphology, hemolysis, and the catalase test. Then, an automated panel of Gram-positive identification (MicroScan Walk-Away® Dade Behring Inc.) was used to identify *Streptococcus agalactiae* species. Patients' medical records were reviewed using a standardized form to collect data.

During 2012 and 2013, 12,585 babies were born in our hospital and eight cases of GBS infection were identified. All positive cultures were collected during the first 48 h of life, representing early-onset sepsis. Therefore, the incidence of GBS infection was 0.63 per 1000 live births.

The median gestational age was 33.5 weeks (range 24–41). The median number of prenatal consultations was four (range 3–9). Not a single pregnant woman had a vaginal-rectal swab collected for screening of GBS colonization and none received antibiotic prophylaxis during labor. Apart from preterm labor, three women presented risk factors for early-onset sepsis: urinary tract infection at the moment of labor or rupture of membranes longer than 18 h. Labor was vaginal in five cases (62.5%) and a cesarean section in three cases (37.5%).

The median birth weight was 2291 g (range 565–3800), the median APGAR score was seven in the first minute and eight in the fifth minute. Six newborns were male (75%) and two female (25%). No newborn had any recognizable birth defect. All presented symptoms of respiratory distress and sepsis, two just after birth and the others during the first 24 h of life. All infants received ampicillin plus gentamicin. Five infants died, a case-fatality rate of 62.5%. A summary of cases is presented in Table 1

The GBS incidence and the high fatality rate are in line with other Brazilian studies,^{2–4} but higher than that achieved with antibiotic prophylaxis during labor, according to GBS prenatal screening in developed countries.¹

Although the number of prenatal consultations was not low, not a single woman had been screened for GBS colonization through vaginal-rectal swab. Additionally, there were missed opportunities for antibiotic prophylaxis according to the latest Centers for Disease Control and Prevention (CDC) recommendations.¹ Antibiotic prophylaxis is recommended to every preterm labor with unknown status of GBS colonization, as it was the case with four (50%) of our cases (excluding one case of a preterm infant that was born through cesarean delivery due to gestational hypertension without labor onset). However, none has received antibiotic during labor. A previous study in Brazil, had already reported 57% of inappropriate use of antibiotic prophylaxis during labor.⁵

In conclusion, GBS remains an important cause of early mortality among Brazilian neonates. Well-established guidelines for its prevention have been applied in developed countries for more than a decade. Nevertheless, the lack of

Table 1 – Data from 8 infants with *Streptococcus agalactiae* infection, Brasília, 2012–2013.

	Cases							
	1	2	3	4	5	6	7	8
Date of birth	06/01/12	21/03/12	11/08/12	20/10/12	27/05/13	11/06/13	06/07/13	03/09/13
Number of prenatal consultations	4	9	4	4	9	3	4	3
Type of labor	Cesarean	Vaginal	Vaginal	Vaginal	Cesarean	Cesarean	Vaginal	Vaginal
Gestational age (weeks)	30	38	32	24	38	26	35	41
Birth weight (g)	1232	3475	1830	565	3800	860	2751	3200
Sex	Male	Male	Female	Female	Male	Male	Male	Male
APGAR score 1/5 min	7/8	8/9	8/9	6/7	5/8	7/7	8/9	1/7
Duration of membranes rupture	At labor	At labor	6 days	7 days	12 h	At labor	At labor	5 h
Time of symptom onset	14 h	8 h	At birth	At birth	12 h	24 h	12 h	12 h
Time of antibiotic prescription	42 h	12 h	At birth	At birth	12 h	At birth	12 h	12 h
Time of death	66 h	Survived	Survived	12 h	Survived	8 days	17 h	27 h

prenatal screening and missed opportunities for antibiotic prophylaxis seem to be frequent in Brazil. Implementation of evidence-based practices is necessary in Brazil to reduce the burden of GBS and prevent death among healthy neonates.

Conflicts of interest

The authors have no conflict of interest to declare.

REFERENCES

- Verani JR, McGee L, Schrag SJ, Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases Centers for Disease Control and Prevention (CDC). Prevention of perinatal group B streptococcal disease – revised guidelines from CDC, 2010. *MMWR Recomm Rep.* 2010;59:1–36.
- Miura E, Martin MC. Group B streptococcal neonatal infections in Rio Grande do Sul, Brazil. *Rev Inst Med Trop Sao Paulo.* 2001;43:243–6.
- Vaciloto E, Richtmann R, de Paula Fiod Costa H, Kusano EJ, de Almeida MF, Amaro ER. A survey of the incidence of neonatal sepsis by Group B *Streptococcus* during a decade in a Brazilian maternity hospital. *Braz J Infect Dis.* 2002;6:55–62.
- Fiolo K, Zanardi CE, Salvadego M, et al. Infection rate and *Streptococcus agalactiae* serotypes in samples of infected neonates in the city of Campinas (São Paulo), Brazil. *Rev Bras Ginecol Obstet.* 2012;34:544–9.
- Costa NDL, Carvalho M, Pone SM, G Júnior SC. Beta-hemolytic streptococcus in pregnant women and their newborn infants: a critical analysis of the protocol used at Fernandes Figueira Institute, Oswaldo Cruz Foundation, in Brazil. *Rev Paul Pediatr.* 2010;28:155–61.

Marília Lopes Bahia Evangelista^a,
Felipe Teixeira de Mello Freitas^{a,b,*}

^a Hospital Materno Infantil de Brasília, Secretaria de Estado de Saúde do Distrito Federal, Brasília, Brazil

^b Núcleo de Medicina Tropical, Universidade de Brasília, Brasília, Brazil

* Corresponding author at: Núcleo de Controle de Infecção Hospitalar, Hospital Materno Infantil de Brasília SGAS 608, módulo A, lote único, Av. L2 sul, CEP: 70203-900, Brasília, DF, Brazil. E-mail address: felipetmf@gmail.com (F.T. de Mello Freitas).

Received 1 June 2014

1413-8670/© 2014 Elsevier Editora Ltda. All rights reserved.
<http://dx.doi.org/10.1016/j.bjid.2014.06.007>