

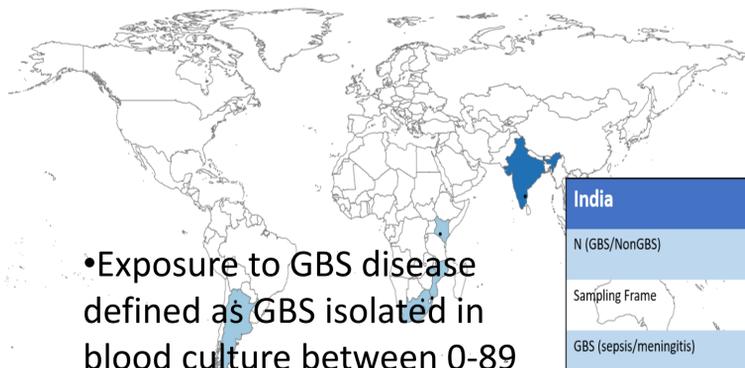
South Indian children's neurodevelopmental outcomes after Group B Streptococcus invasive disease: A case cohort study



Introduction

- Part of a multi- country matched cohort study
 - No prior studies from Asia looking at neurodevelopmental outcomes (NDO) post iGBS
- Aims:**
- Estimate the risk of long term neurodevelopmental impairment (NDI) of children exposed to iGBS
 - Categorise severity in the domains of vision, hearing, cognition, language, motor skills and behaviour in the iGBS cohort when compared to a non-GBS group

Methods

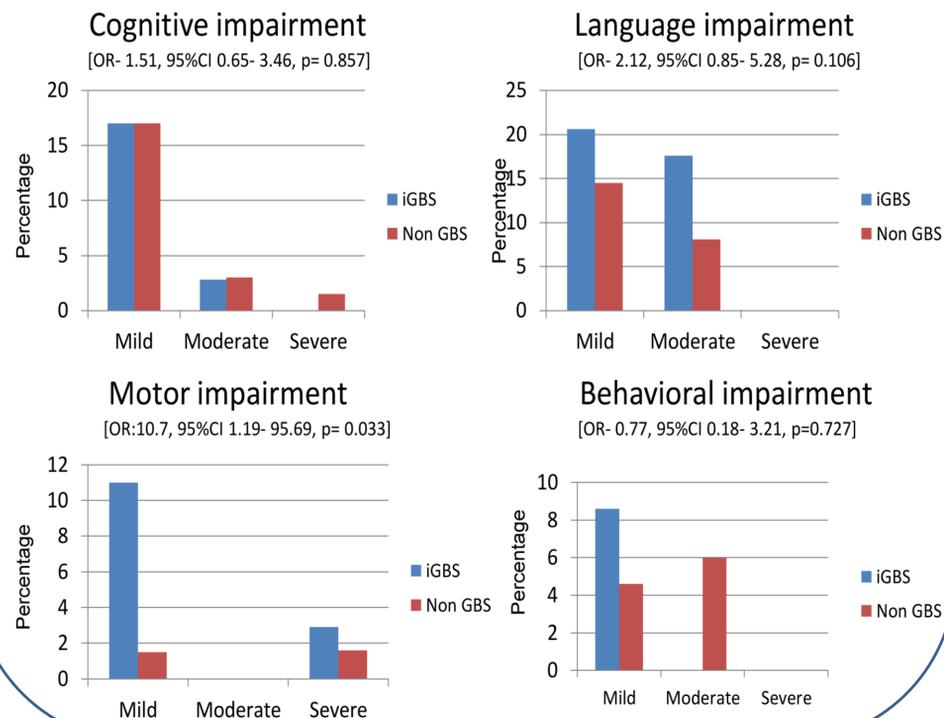


- Exposure to GBS disease defined as GBS isolated in blood culture between 0-89 days of life
- Period of recruitment- January 2020 to April 2021
- Unexposed children matched for age and gender

India		
N (GBS/NonGBS)	35	65
Sampling Frame	Hospital Records	Hospital records
GBS (sepsis/meningitis)	31	4
Median Age	3 (1-14years)	
Neurodevelopmental Assessments	Bayley Scales of Infant and Toddler development, Wechsler's Preschool and Primary Scale of Intelligence, Wechsler's scale of Intelligence, Bruininks-Oseretsky Test of Motor Proficiency Second Edition, Child Behavior Checklist	

Results

- 17 (48%) iGBS survivors had impairment in at least one of the assessed domains as compared to 25 (38%) in the non-GBS group [Unadjusted OR- 1.51, 95%CI 0.65- 3.46]
- 9 (26%) iGBS survivors had impairment in more than one domain compared to 10 (15%) in the non-GBS group [Unadjusted OR- 1.90, 95% CI 0.69- 5.24]
- 1 (2.9%) iGBS survivor had moderate to severe impairment compared to 3 (4.6%) in the non-GBS group [Unadjusted OR- 0.60, 95%CI 0.06- 6.07].
- iGBS exposed children had approximately 50% higher odds of NDI but this was not statistically significant
- Children in the iGBS group had significantly more motor impairments compared to the non GBS group



Discussion

- Lower rates of moderate to severe NDI compared to other studies :
 - South Africa- 3.5 fold increased odds of NDI at 1 year (24%) in exposed and 10 (7%) unexposed (Nakwa FL et al., 2020)
 - Denmark and the Netherlands iGBS disease associated with an increased risk of NDI at 10 years of age (RR 1.77 [1.44–2.18]) and (RR 2.28 [1.64–3.17]) respectively (E Horváth-Puhó et al., 2021)
 - Present study- India (1/35; 2.9%), Kenya (3/29; 3.4%), South Africa (9/43; 20.9%), Mozambique (4/11; 27.3%), and Argentina (3/13; 23.1%) (Paul P et al., 2021)

Strengths and Limitations

- First study in Asia examining NDI amongst iGBS survivors using standardized developmental assessment tools across several domains, and comparing with a matched non-GBS group
- Small sample size due to pandemic related travel restrictions.

Conclusion

- Follow up of High risk infants and early screening and intervention for motor delay is mandatory in LMICs.
- Larger studies are required to estimate the full impact of iGBS disease on NDO and confounding environmental adversities

Authors: Hima B John¹, Asha Arumugam¹, Mohana Priya¹, Nandhini Murugesan¹, Nandhini Rajendraprasad¹, Grace Rebekah², Proma Paul^{3,4}, Jaya Chandna^{3,4}, Joy E Lawn^{3,4}, Sridhar Santhanam¹

Affiliations: Departments of Neonatology¹ and Biostatistics², Christian Medical College, Vellore; ³Maternal, Adolescent, Reproductive & Child Health (MARCH) Centre, London School of Hygiene & Tropical Medicine; ⁴Department of Infectious Disease Epidemiology, London School of Hygiene & Tropical Medicine, London, UK