E-Poster # 210

Prematurity and Postnatal Neurological Sequelae

Prof. Mohammad Abdul Wahed

Childhood Disability Research Center, Astha Hospital, Rangpur, Bangladesh.

ICNC 2024 Footprints to the future
INTERNATIONAL CHILD NEUROLOGY CONGRESS
Cape Town, South Africa I May 6-10, 2024

Introduction

Prematurity is a public health problem worldwide. Every year, 15 million infants are born premature, accounting for a prevalence of 11% in 84 surveyed countries[1,2]. Premature births alone account for a quarter of all neonatal deaths[3]. These survivors of premature births have high rates of postnatal neurological morbidities[4,5,6].

Objective

The objective of this review study was to present the sequelae of prematurity in a consolidated manner.

Materials & Methods

A literature review was performed using the search terms 'preterm births and neurodevelopment outcomes', 'preterm babies and neurodevelopmental sequelae', 'preterm births and neurodevelopmental sequelae'. The papers matching such keywords and published from 2000 to 2022 were included for making a list. Among them original research works and review articles were selected for analysis.

Results

From the search results the primary sequelae were CP, Neurocognitive disability, Global Developmental Delay, ROP, Sensorineural Deafness, Epilepsy, ASD, ADHD and Neuropsychosis. The secondary causes which indirectly contributed to produce neurological consequences were severe anaemia, immunodeficiency, renal dysfunction, Persistent Primary Pulmonary Hypertension and Cardiovascular anomalies (Fig. 1).

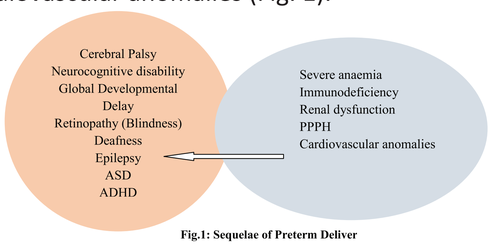

Fig.1: Sequelae of Preterm Deliver

Cerebral palsy (CP)[7,8,9]

France study	Serbia study
The overall rate of cerebral palsy at-	In cases of CP -
24-26 WGA 6.9% (4.7% to 9.6%)	54% were preterm
27-31 WGA 4.3% (3.5% to 5.2%)	30.3% late preterm
32-34 WGA 1.0% (0.5% to 1.9%)	17.2% moderate preterm
	6.9% extremely preterm

Fig 2: Preterm Delivery and CP

Neurocognitive disability[10-14]

Fig 3: Children with neurocognitive disorder

Attention Deficit Hyperactive Disorder (ADHD)[15]

Meta analysis on 1550 babies - RR of ADHD was 2.64 in children born preterm	Population based study RR of ADHD 1.3 in GA 28-36 week RR of ADHD 5.0 in GA <28 week

Fig. 4: Risk of ADHD in preterm babies

Autism Spectrum Disorder (ASD)[16, 17]

Cohort study of ASD after adjusting OR 3.3 • Extremely preterm (22-27 weeks) 6.1% • Very to moderate (28-33 weeks) 2.6% • Left preterm (34-36 weeks) 1.9% • Full term (39-41 weeks) 1.4%	

Fig. 5: Risk of ASD in preterm babies

Psychiatric disorders: Preterm birth has been identified as a significant risk factor for some specific psychiatric disorders in children such as emotional disorders, depression, ADHD and ASD[18,19,20].

Hearing loss[26-28]

Poland study
11.0% born <25 WGA
5.0% born at 26-27 WGA
3.46% born at 27-28 WGA
2.0-3.0% born at 29-30 WGA

Fig.7: Prematurity and sensorineural deafness

Retinopathy of Prematurity (ROP) 21-25

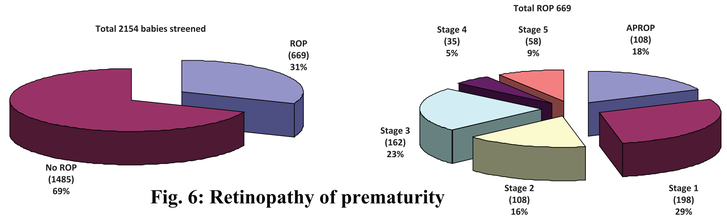

Fig. 6: Retinopathy of prematurity

Epilepsy[29-33]

GA 23-31 weeks OR 4.98 GA 32-34 weeks OR 1.98 GA 35-36 weeks OR 1.76	Population registry studies- •49% Intellectual disability •31% Severe CP •26% Behaviour disorder •35% Epilepsy •11% Blindness •04% Hearing loss

Fig. 8: Prematurity and epilepsy

Conclusions

Conclusion: Survivors of preterm babies suffer from various types of morbidities in post natal life. Prevention of preterm birth through adequate antenatal care, safe delivery and immediate postnatal care can reduce these morbidities.

References

1. The Lancet Global Health 2019; 7(1): e37-e46.
2. Fisioter Mov. 2016; 29(3): 623-33.
3. The Lancet 2005; 365: 891-900.
4. ArqNeuropsiquiatr 2005; 63(4); 956-62
5. Indian Pediatr 2009; 46Suppl; s71-4.
6. BMJ Open 2020; 10: e035854
7. Clin Perinatol2006;33:251-67.
8. Orthop Clin North Am 2010;41:441-55
9. Paediatr Child Health 2014;19(4):185-189.
10 . J Abnorm Child Psych 2009; 37(7): 981-993.
11. Dev Med Child Neurol 2018; 60(5): 452-468.
12. Pediatrics 2007; 120(4): 793-804.
13. N Eng J Med 2005; 352(1): 9-19.
14. Dev Med Child Neurol 2013; 55(9): 788-796.
15. J Am Acad Child AdolescPsychitry 2021; 45: 21-30.
16. Pediatrics 2015;136(3): 415-423.
17. Pediatrics 2018;142(3):e20180134
18. Pediatric Res 2011; 69 (5): 11R-18R.
19. Pediatrics 2021; 148 (3): 1-21.
20. J Neurodevelop Dis 2021; 23: 15-23.
21. Trans Am Ophthalmol Soc 2012; 40: 262-84
22. Am J Opthalmol2014; 25: 203-204
23. Arch Dis Child Fetal Neonatal Ed 2015;100:F301-8.
24. Arch Dis Child Fetal Neonatal Ed 2012;97:F167-73.
25. Comm Eye Health J 2018; 31 (101): S25-S26.
26. Acta Pediatrica 2007; 96(8): 1155-58.
27. Pediatrics 2012; 130(5): e1285
28. Int J PediatrOtorhinolaryngol 2003; 67(4): 353-357.
29. Dev Med Child Neurol 2000; 42(12): 816-824
30. Dev Med Child Neurol 2010; 52(6): e119-e125
31. Dev Med Child Neurol 2005; 47(8): 571-576
32. Dev Med Child Neurol 2014; 56(4): 323-328
33. Neurology 2011; 77 (4): 1376-1381.