The Attention Deficit Hyperactivity Disorder (ADHD) phenotype in preterm graduates

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INTRODUCTION

Context

- Over the past several decades we have increased survival of premature newborns. The complications of surviving preterm births is a burden on the families, results in individuals requiring greater educational, social support, sub specialist interventions, medication and therapies.
- Due to sequelae earlier detection and intervention is imperative in identifying the at risk preterm.
- Those individuals born prematurely are at increased risk for neurodevelopmental conditions, especially ADHD. In the preterm graduates, the phenotype of ADHD is not commonly recognised.

MATERIALS & METHODS

PARTICIPANTS

Category	Gestational Age (Weeks)	Risk
Extremely Preterm (EP)	<28 Weeks	High Risk
Very Preterm (VP)	28-32 Weeks	High Risk
Early Moderate Preterm (EMP)	32-34 Weeks	At Risk
Early Moderate Preterm (LMP)	34-<37 Weeks	At Risk

PROCEDURE

To systematically review the ADHD phenotype in individuals born preterm. ***(Data Sources: PubMed Central)***

RESULTS

RISK FACTORS FOR ADHD IN PREMS

Environmental / Obstetric	Neonatal Factors	Early Development Factors
Social Disadvantage, Low Maternal LOE, Psychosocial Stress	Gestational Age (Extreme & very early prems)	Abnormal Neurofunctional Assessment at 3 months
Young Maternal Age	Neonatal Sepsis / NEC (Increases ADHD 2-4 fold)	Speech, Motor or Cognitive Delay
Teratogen Exposure	Chronic Lung Disease	
Maternal Infection / Antibiotic Usage	Mechanical Ventilation Lung Injury	
Antenatal Steroids in Later / Moderate Prems	IVH	
Threatened Miscarriage	Post Natal Steroid Usage	
	Prolonged & Supportive Neonatal Care	

PRETERM VERSES TERM FEATURES OF ADHD

	PREM	TERM
Genetics	Less Causative	Strong Aetiology
ADHD Subtype	Inattentive Predominant Subclinical Inattention	Combined Presentation Predominant
Comorbidity	Less Comorbidity	Comorbidity Is The Rule
Cognitive Impairment	Often Present	Not Common
Gender	Skew To Female Predominance	Male Predominance Is Greater
Motor Difficulties	Strong Early Sign Of ADHD	There Is No Association

CONCLUSION

- ADHD is more common in preterm graduates
- The lower the GA and weight proportional to higher prevalence of ADHD
- ADHD PPT by obstetric factors , maternal factors and neonatal factors
- ADHD in PREM present differently from GP (inattentive predominant) often being sub-threshold for diagnosis
- EP+ADHD associated with cognitive impairment
- Those of moderate to late preterm have ability to “catch up “with term peers
- Associative early markers include, abnormal NFA scores at 3 months and abnormal motor development at 24 months of age

REFERENCES

1. Attention deficit/ hyperactivity disorder and very preterm/ very low birth weight : a meta-analysis . DOI:10.1542/peds.2017-1645
2. Extreme prematurity and attention deficit: epidemiology and prevention. DOI:10.3389/fnhum.2013.00578
3. ADHD symptoms and their neurodevelopmental correlates in children born very preterm. DOI.org/10.1371/journal.pone.0224343
4. Neurodevelopmental outcomes in late preterm infants. AJGP. Nov 2018
5. The quality of preterm infants spontaneous movements: an early indicator of intelligence and behaviour at school age. DOI.org/10.111/j.1469-7610.2009.02066.x
6. The association between early minor motor difficulties in extreme low birth weight infants and school age attention difficulties .DOI.org/10.1016/j.earlhumdev.2005.10.012
7. Psychiatric disorders in individuals born very preterm/ very low-birth weight: an individual participant data meta-analysis. DOI:10.1016/j.eclinm.2021.101216
8. Psychiatric outcomes , functioning and participation in extremely low gestational age newborns at age 15 years. DOI:10.1016/j.jaac.2021.12.008
9. Maternal depressive symptoms, poverty and young motherhood increase the odds of early depressive and anxiety disorders for children born prematurely. DOI :10.1002/imhj.21924
10. The relationship between attention deficit hyperactivity disorder and premature infants in Taiwanese. DOI 10.1186/1471-244X-12-85
11. Development of a new scoring method in the neurofunctional assessment of preterm infants. DOI.org/10.1038/s41598-022-20754-y
12. ADHD among young adults born at extremely low birth weight : the role of fluid intelligence in childhood. DOI: 10.3389/fpsyg.2014.00446
13. Quality of general movements and psychiatric morbidity at 9 to 12 years. DOI.org/10.1016/j.earlhumdev.2008.05.005
14. The proportion of term or late preterm births after exposure to early antenatal corticosteroids and outcomes a systematic review and meat-analysis.DOI.org/10.1136
15. Mental health of extremely low birth weight survivors: a systematic review and meta –analysis . DOI.org/10.1037/bul0000091.supp