Journal of Rare Cardiovascular Diseases
ISSN: 2299-3711 (Print) | e-ISSN: 2300-5505 (Online)
www.jrcd.eu
RESEARCH ARTICLE

A STUDY ON THE RISK FACTORS AND PREVALENCE OF TRANSIENT TACHYPNEA IN NEWBORNS AND USAGE OF ANTIBIOTICS IN ITS TREATMENT AT A TERTIARY CARE CENTER IN SOUTH INDIA.

Korimerla Deepika [1], Dr. V Rajesh Kumar [2] * Kadeeja K S [3], Hema Sree Lakshmi Guddeti [4] Anisha Vanguru [5] , Chandana sai Kodali [6]

[1]Compulsory Rotating Medical Internship(CRMI) at Apollo Institute of Medical Science and Research, Chittoor, Andhra Pradesh, India.
[2]Associate professor of Pediatrics, Apollo Institute of Medical Science and Research, Chittoor, Andhra Pradesh, India.
[3]Duty doctor , Sree Gokulam Medical College, Thiruvananthapuram, Kerala.
[4]Compulsory Rotating Medical Internship(CRMI) at Apollo Institute of Medical Science and Research, Chittoor, Andhra Pradesh, India
[5]Compulsory Rotating Medical Internship(CRMI) at Apollo Institute of Medical Science and Research, Chittoor, Andhra Pradesh, India.
[6]Compulsory Rotating Medical Internship(CRMI) at Apollo Institute of Medical Science and Research, Chittoor, Andhra Pradesh, India.

*Corresponding Author
Dr. V Rajesh Kumar 2 *

Article History
Received: 09.09.2025
Revised: 24.09.2025
Accepted: 13.10.2025
Published: 31.10.2025

Abstract: ***Background:*** Transient tachypnea in newborns is a benign, self-limiting Cause of respiratory distress that leads to the admission of newborns to the NICU and requires prompt diagnosis and treatment. Therefore, this study aims to find the incidence, risk factors, and outcome of newborns with transient tachypnea based on clinical features. The secondary objective is to find the relation between Transient tachypnea and sepsis. ***Methods:*** This prospective observational study was conducted among newborns with Transient tachypnea admitted to the NICU (Neonatal Intensive Care Unit) of the Government General Hospital, Chittoor, from August 2022 to December 2022 after obtaining approval from the institutional ethics committee of Apollo Institute of Medical Science and Research, Chittoor. ***Results:*** The newborns included in our study were 61. The incidence was 21 cases per 1000 live births. The average gestational age of newborns was 38.1+1.75, and birth weight was determined to be 2.83+0.42. Neonates were part of the study following the inclusion criteria. Risk factors identified with TTNB are male sex, infants of mothers with pre-eclampsia, gestational diabetes mellitus, and severe anaemia. Outcome is predicted based on the Downs score at presentation and the length of respiratory distress following birth. ***Conclusion:*** According to this study, we concluded that the type of delivery is not a risk factor for the development of TTNB. Newborns with greater than 34 weeks of gestational age born to mothers with pre-eclampsia, diabetes mellitus, and severe anaemia have an increased risk of development of TTNB, higher downs score at presentation, and early respiratory distress and duration of distress greater than 24 hrs After admission, are linked to longer duration of hospital stay. Blood culture results obtained are inconclusive for the majority of cases, indicating the unnecessary usage of prophylactic antibiotics for TTNB.

Keywords: Antibiotics, Hospitalization, Transient tachypnea of newborn

INTRODUCTION

Transient tachypnea of the newborn (TTNB) is a benign, self-limiting condition that may develop in infants of any gestational age soon after birth. It results from a delay in the clearance of fetal lung fluid, leading to ineffective gas exchange, respiratory distress, and tachypnea [1] TTNB is the second most frequent reason for admission to the neonatal intensive care unit (NICU) and the most common respiratory cause of respiratory distress in NICU admissions.[2] In high-income countries, the incidence ranges from 4.0 to 5.7 per 1,000 live births. In contrast, in India, it is 13 per 1,000 live births.[3] Factors that increase the risk for fetal issues are being male, experiencing perinatal asphyxia, being born prematurely, and being either small or large for gestational age. A key symptom of TTNB is rapid breathing, exceeding 60 breaths per minute.[4] Typically, TTNB resolves on its own, but in some cases, oxygen and nutritional assistance might be necessary. Antibiotics are seldom Occasionally, there have been instances of severe TTNB in which newborns develop persistent pulmonary hypertension, potentially caused by an increase in pulmonary vascular resistance due to retained lung fluid.[5]

MATERIAL AND METHODS

This Prospective cross-sectional study was carried out in the Special Newborn Care Unit, Government General Hospital, Chittoor, from August 2022 to December 2022 after obtaining approval from the institutional ethics committee of Apollo Institute of Medical Science and Research, Chittoor. Newborns incuded in this study were those who completed 34 weeks of gestational age, Onset of respiratory distress within 6hrs, Respiratory distress up on admission (Respiratory rate >60/min, grunting, nasal, flaring and retractions) and typical chest radiography findings (fluid in minor fissures, Hyperinflation or increased antero posterior diameter, prominent vascular/perihilar markings (sunburst pattern) and exclusion critera included newborns who are Preterm <34 weeks Gestational age, Newborns with respiratory distress beyond 72 hrs, Newborns having polycythemia, hypoglycemia, hypocalcaemia, meconium aspiration, pneumonia, aspiration,

congenital heart disease, perinatal asphyxia, congenital malformations, tachycardia and early onset sepsis. Investigator visited the SNCU daily for any admissions of respiratory distress. Data was collected with the help of a pre-designed semi-structured questionnaire. Consent will be taken from the mothers of the newborns after explaining to them the nature and purpose of the study. Anonymity and confidentiality of the subjects will be maintained during and after the study. Data pertaining to antenatal, intrapartum history of the mother, and newborn birth history will be collected using pre pre-designed questionnaire. Further investigations related to sepsis, like blood culture, C-reactive protein Level, and chest X Ray findings, will be used. Clinical manifestations will be assessed using Down's scoring system as follows. Based on the severity of respiratory distress, management of the newborns may require oxygen support, antibiotics. Outcome will be assessed based duration of stay in the SNCU.

STATISTICAL ANALYSIS: Data will be entered into an MS Excel sheet, and summary statistics will be prepared for continuous variables like gestational age, duration of stay in hospital, weight of the baby, etc. The mean and standard deviation will be estimated. For discrete variables, proportionality will be found. Association of risk factors with outcome will be analyzed using the chisqaure test. Analysis will be done by using the software SPSS version 21. (IBM Corp., Armonk, New York, United States. IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM

RESULT AND OBSERVATIONS:

Table 1: Comparison Of Characteristics Of Newborns Who Recovered Within 24 Hours To Those Who Recovered > 24 Hrs

Maternal and Neonatal		No. of Cases		
		Duration of distress in hours ≤ 24hrs	>24 hrs	P-values
Weight at Birth	<= 2,5Kgs	15	5	.034
	> 2.5 Kgs	19	22	
Gender	Male	15	20	.019
	Female	19	7	
Downs score	< = 4	28	14	.018
	= 4 to 7	5	11	
	=>7	1	2	
Type of delivery	Normal Delivery	21	16	.842
	C-Section	13	11	
Any medical comorbidities (Mental Comorbidities)	No Comordipes	21	15	0.527
	Pregnancy-induced hypertension/pre-eclampsia	4	1	
	Eclampsia	0	1	
	Gestational diabetes	3	2	
	HypoThyroidism	1	3	
	Severe Anemia	3	2	
	Others	2	1	
	Multiple Complications	0	2	
Parity	Primigravida	14	9	.050
	Multigravida	20	18	
Gestational weeks	Late preterm (<= 36)	11	8	.820
	Term (>36)	23	19	

Table 2: Association Of Duration Of Distress With Maternal And Neonatal Variables

Maternal and Neonatal Variables		Frequency	Percent	Mean	P-Value
Gender	Male	39	63.9	64	.040
	Female	22	36.1	36.7	
Type of Delivery	Normal Delivery (NVD)	39	63.9	63.93	.040
	C-Section (LSCS)	22	36.1	36.07	
Weight at Birth	NBW	14	20.3	22.95	.000
	LBW	47	68.1	77.05	
Any Medical Complications (Maternal Comorbidities)	No Comorbidities	36	59.0	59.02	.000
	Pregnancy-Induced Hypertension	5	8.2	8.20	
	Eclampsia	1	1.6	0.02	
	Gestational Diabetes	5	8.2	8.20	
	Hypothyroidism	4	6.6	6.56	
	Severe Anaemia	5	8.2	8.20	
	Other	3	4.9	4.92	
	Multiple Complications	2	3.3	3.3	
Downs score	<= 4	42	68.9	68.9	.0001
	4 to 7	16	26.2	26.2	
	> 7	3	4.9	4.9	
Gestational Weeks	Late Preterm <= 36	13	21.3	21.31	.000
	Term > 36	48	78.7	78.69	
Parity	Primigravida	22	34.4	36.07	.0001
	Multigravida	39	63.9	63.93	

TABLE3: Relation between TTNB and sepsis

	Count	%	Mean	SD
TLC value on day 1	60	98.4	11437.28	7240.083
TLC value on day 3	47	77	6660.66	3355.407
Anc value on day 1	59	96.7	5975.95	4532.065
Anc value on day 3	47	77.0	3467.91	1558.490
CRP value in mg/litre on day 1	60	98.4	9.1782	14.75198
CRP value in mg/litre on day 3	46	75.4	4.1239	3.76362

Table 4: Characteristics of the study population

		Not Received	Received	P-Values
sex	Male	4	31	.102
	Female	8	18	
Weight at Birth	Normal	8	39	.445
	Low Birth Weight	4	10	
Gestational weeks	Late Preterm	4	20	.749
	Term	8	29	
APGAR at 1st minute	Severely depressed	0	1	.770
	Moderately depressed	10	36	
	Normal	2	12	
APGAR at 5 minutes	Moderately depressed	1	2	.448
	Normal	11	47	
Type of delivery	Normal Delivery	6	25	.948
	C-Section	6	24	
Parity	Primi	3	20	.508
	Multipara	9	29	
History of maternal illness	No	11	44	1.0
	Fewer With Rash	0	1	
	UTI	1	4	
Type of respiratory support	No Oxygen Support	11	24	.011
	Nasal Cannula	0	2	
	Hood Oxygen	1	2	
	CPAP	0	21	
Length of hospital stay in days	Greater than 3	**5**	**36**	.042
	Less than or Equal to 3	**7**	**13**	

DISCUSSION

In India, TTN affects approximately 13 per 1,000 live births in Northern India, according to Thomas et al.(1981), and 28 cases per 1000 live births in Southern India as reported by Kumar and Bhatt(1996) 3. The incidence of TTN in our hospital is 21/1000 live births. The incidence of TTN in our study period was 2.1% of live births. Being the majority of cases in our institution were TTN, and due to less standardized and conflict-based treatment protocols and the usage of antibiotics for the treatment, there is a need to study the occurrence, risk factors, clinical outcomes, and the correlation of TTN with sepsis in our study. In our study, male patients(57.4%) have a higher incidence of TTN compared to female patients(42.6%), similar to the study carried out by Kasap et al., Tutdibi et al, and Chavan et al., who concluded that the male sex poses a risk for TTN. This risk was probably due to differences in lung maturation in both sexes, 4,5. In the study conducted by Eman F Badran et al., LSCS (elective cesarean section) was found to an increased risk of respiratory morbidity development at gestational age less than 39 weeks 6, whereas in our study there were 50.8% of newborns born by normal delivery and 49.2% by LSCS accounting for no relation between type of delivery and Transient tachypnea development. In the study conducted by Kanishk Jha et al., gestational diabetes and maternal asthma are the maternal comorbidities associated with TTNB 1whereas Eman Bardan et al. concluded that their study identified maternal hypertension, diabetes mellitus, and the

absence of labor as independent factors associated with the development of respiratory distress syndrome 4,7,8, and in a study carried out by Anahitha Khabaz Tarahi and Ali Omadian et.al, paying attention to the mother's medical condition, and Her illness was linked to a reduced prevalence of respiratory distress in newborns 9. On the other hand, our study encompassed five cases of preeclampsia, five cases of gestational diabetes mellitus, and four cases of hypothyroidism. Cases of severe anemia were noted, supporting the findings from the above articles. In a research conducted by J J Morrison et al. to find relative risk between 37 and 38 weeks of delivery and between 38 and 39 weeks of

gestational age, it was found that there is less risk in The onset of neonatal respiratory distress when delivery is performed after 38 and 39 weeks of gestational age as correlating with our study 10.In a study conducted by Amani Mahmoud Oscan et al. and Camilla Gizzi et al. CPAP reduces the duration of tachypnea, NICU stay, and maximal FiO2 exposure compared to FiO2 alone, correlating with the same results as in our research 11,12. In a research conducted by Andrea S. Weintraub et al to assess the usage of antibiotics in the treatment of Transient Tachypnea of newborns(TTN) found that empiric postnatal antibiotic treatment is not needed for late preterm and term infants diagnosed with TTN in the absence of specific risk factors correlating with the same results as in our research 13,14

LIMITATIONS OF THE STUDY

Small Sample Size: Other limitations of the current research include reliance on limited sample sizes. Although our data provides considerable insight. Our findings may have limitations in terms of generalizability to a larger population. Large-scale studies involving a greater number of participants may be required to confirm the findings presented here and also to establish generalizability across diverse populations.

CONCLUSION

The major perinatal elements that were independently linked to the administration of antibiotics elements such as sex, birth weight, gestational age, APGAR scores, mode of delivery, and maternal illness. The two most influential perinatal risk factors for higher antibiotic use come from the respiratory support required and the length of hospital stay. Greater requirements for respiratory support and longer lengths of hospital stay independently predicted higher risks for receiving antibiotics, perhaps as a reflection of greater concerns among infants. According to this study, we concluded that the type of delivery is not a risk factor for the development of TTNB. Newborns with greater than 34 weeks of gestational age born to mothers with pre-eclampsia, diabetes mellitus, and severe anaemia are at increased risk of development of TTNB, higher Downs score at presentation, and early respiratory distress and duration of distress greater than 24 hrs after 31Admissions are linked to an extended duration of hospital stay. Blood culture results obtained are inconclusive for the majority of cases, indicating the unnecessary usage of prophylactic antibiotics for TTNB.

REFERENCES:

1. Jha, K., Nassar, G. N., & Makker, Transient Tachypnea of the Newborn. In Stat Pearls. Clinical neonatology 2021:9:4 (7) 169-172
2. Lakshminrusimha S, Keszler M. Persistent Pulmonary Hypertension of the Newborn. Neoreviews. 2015;16(12):680-692 .
3. Chavan, Malwade S D, Kumari S, et al. Incidence, Clinical Features, and Outcomes of Transient Tachypnea of the Newborn at a Tertiary Care Center in Western India. Cureus journal of neonatology 2018: 14(4): 23-29.
4. Kasap, B., Duman, N., Ozer, E., Tatli, M., Kumral, A., & Ozkan, H. (2008). Transient tachypnea of the newborn: predictive factor for prolonged tachypnea.Pediatrics international: official journal of the Japan Pediatric Society, 2019: 50(1), 81–84.
5. Tutdibi, E., Gries, K., Bücheler, M., Misselwitz, B., Schlosser, R. L., & Gortner, L. (2010). Impact of labor on outcomes in transient tachypnea of the newborn: population-based study. Pediatrics 2020:17 (4) 125-128
6. Badran, E. F., Abdalgani, M. M., Al-Lawama, M. A., Al-Ammouri, I. A., Basha, A. S., Al Kazaleh, F. A., Saleh, S. S., Al-Katib, F. A., & Khader, Y. S. Effects of perinatal risk factors on common neonatal respiratory morbidities beyond 36 weeks of gestation. Saudi medical journal, 2012: 33(12), 1317–1323.
7. Zanardo, V., Simbi, A. K., Franzoi, M., Soldà, G., Salvadori, A., & Trevisanuto, D. (2004). Neonatal respiratory morbidity risk and mode of delivery at term: influence of timing of elective caesarean delivery. Acta Paediatrica. 2019:93(5),643–647.
8. Jain L et.al Respiratory morbidity in late-preterm infants: prevention is better than cure!. American journal of perinatology, 2017:25(2), 75–78.
9. Khabaz Tarahi, A., & Omidian, A. (2020). The Relationship between Neonatal Transient Tachypnea and Maternal Disease in Newborns. Iranian journal of public health,2019: 49(9), 1808–1809.
10. Morrison, J. J., Rennie, J. M., & Milton, P. J. (1995). Neonatal respiratory morbidity and mode of delivery at term: influence of timing of elective caesarean section. British journal of obstetrics and gynaecology, 2021: 102(2), 101–106
11. Osman, A. M., El-Farrash, R. A., & Mohammed, E. H. (2019). Early rescue Neopuff for infants with transient tachypnea of newborn: a randomized controlled trial. The journal of maternal-fetal & neonatal medicine: the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians,2019; 32(4),597–603.
12. Gizzi, C., Klifa, R., Pattumelli, M. G., Massenzi, L., Taveira, M., Shankar-Aguilera, S., & De Luca, D. (2015). Continuous Positive Airway Pressure and the Burden of Care for Transient Tachypnea of the Neonate: Retrospective Cohort Study. American journal of perinatology, 2022: 32(10), 939–943.
13. Weintraub AS, Cadet CT, Perez R, DeLorenzo E, Holzman IR, Stroustrup A. Antibiotic use in newborns with transient tachypnea of the newborn. Neonatology.2013:103(3):235-40