

A Review of Neonatal Tetanus Seen in Rasheed Shekoni Specialist Hospital, Dutse, Jigawa State, Nigeria

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Abstract

Background: Neonatal tetanus is a major contributor of neonatal mortality in developing countries. The study was aimed to identify the prevalence, routes and mortality rate among newborns with tetanus admitted to the Special Care Baby Unit (SCBU) of Rasheed Shekoni Specialist Hospital (RSSH), Dutse Jigawa State, Nigeria.

Methodology: The study was a retrospective hospital-based. Neonates less than one month old, with a diagnosis of tetanus and who were admitted into SCBU from January 2016 to December 2018 were included. Their medical records were retrieved and analyzed. Data were analysed using SPSS version 16. Ethical clearance was obtained from RSSH.

Results: There were 36 cases of neonatal tetanus admitted over the 3 years under review. This represented 4.30% of the total admission into the unit in the same period. Thirty cases (83.33%) had complete record for analysis. There were 20(66.7%) males, while male: female ratio was 2:1. The age range was 6 to 22 days, and mean age of 10.70±4.69 days. Only 28.6% of the mothers received tetanus toxoids during antenatal care. The major route of entry was traditional uvulectomy (80.0%). Twelve (40.0%) babies were discharged home. Mortality rate was 53.3%.

Conclusion: Traditional uvulectomy is the major route of entry for neonatal tetanus. The mortality rate is still high.

Keywords: Neonatal Tetanus; Mortality; Jigawa; Nigeria.

Introduction

Tetanus occurs worldwide and is endemic in approximately 90 developing countries, although its incidence varies considerably. The most common form, neonatal tetanus, kills approximately 300,000 infant each year, with approximately 80% of deaths in just 12 tropical Asian and African countries.¹ Tetanus is therefore, a preventable disease with high mortality and accounts for about 5-7% of neonatal death globally.²⁻⁴ Considerable progress has been made since 1989 when the World Health Assembly called for the elimination of Neonatal Tetanus by 1995, with a reduction of in the number of endemic countries from 106 to 30 as at May 2013.⁵ Nigeria is one of 30 remaining high-risk countries that have not achieved the Maternal and Neonatal Tetanus Elimination

(MNTE) goal yet.⁵ Neonatal tetanus occurs in infants whose mothers are not immunized.¹ Nigeria is taking steps toward reduction/elimination of neonatal tetanus.⁶ However, the disease is still being seen in hospitals.

Even though many babies with neonatal tetanus are referred and managed in this hospital, there has been no published study that documented trends and mortality in this severe but preventable disease.

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Consequently, this study was aimed to find the prevalence, routes of infection and outcome of neonatal tetanus in the special care baby unit (SCBU) of Rasheed Shekoni Specialist Hospital (RSSH), Dutse Jigawa State.

Materials and Methods

The study was retrospective hospital-based of all neonates from birth to 28 days old, with a diagnosis of tetanus who were admitted into Special Care Baby Unit of paediatric Department of Rasheed Shekoni Specialist Hospital Dutse. Dutse is the state capital of Jigawa state in Nigeria. It is located on the latitude 11.00 N to 13.00 N and longitudes 8.00 E to 10.15 E.⁷ Jigawa has an estimated population of 4,348,649 according 2006 population census.⁷ It is a referral hospital for the state and neighbouring states including Kano and Bauchi States.

Medical records of all neonates with tetanus admitted from January 2016 to December 2018 were retrieved and analyzed. Diagnosis of tetanus was clinical based on trismus, repeated muscle spasms, abdominal rigidity, and after excluding differential diagnoses. Each case was managed with intravenous metronidazole 20 mg/kg/day 12 hourly, one dose of antitetanus serum 10,000 IU, triple anticonvulsant drugs (phenobarbitone 5 mg/kg 6 hourly, diazepam 1 mg/kg 6 hourly, and chlorpromazine 1.5 mg/kg 6 hourly all in stagger doses 2 hourly) and supporting care. Magnesium sulphate 50 mg/kg 12 hourly intravenous as infusion was introduced in September 2017 because of the high fatality rate recorded earlier. Data obtained from the patients' folders included: Age, sex, date of admission, place of delivery, maternal tetanus immunization status, ANC visit, and traditional practices (such as uvulectomy, cord care). The duration of hospitalization and outcome (discharge, death or left against medical advice) were also noted.

Ethical Clearance

Ethical clearance for the study was obtained from the Research and Ethics Committee of the Rasheed Shekoni Specialist Hospital before commencement of the study.

Data analysis

Data were analyzed using SPSS version 16, Chicago, Illinois. A p value less than 0.05 was considered statistically significant.

Results

A total of 837 babies were admitted into the SCBU over the 3-year period. Among them 36 (4.30%) had tetanus. Thirty (83.33%) of babies with tetanus had complete record for analysis. There were 20 (66.7%) males and 10 (33.3%) females. Male to female ratio was 2:1. The age at the time of admission ranged from 6 to 22 days with a mean of 10.70±4.69 days. Mean duration of hospital stay was 7.13±8.17 days. Only 7 (23.3%) of the mothers booked for ante natal care during the index pregnancy, and only 1 (3.3%) of the mothers received TT vaccine. Details are shown in Table 1.

Table 1: Socio-demographic and clinical characteristics of babies with tetanus

Variable	Number	Percentage
Gender		
Male	20	66.7
Female	12	33.3
Age group (days)		
-	0	0.0
4 - 7	10	33.3
8 - 14	17	56.7
> 14	3	10.0
Maternal ANC		
Booked	7	23.3
Unbooked	17	56.7
Not documented	6	20.0
Maternal TT immunization		
Complete	1	3.3
Incomplete	1	3.3
None	22	73.3
Not documented	6	20.0
Social class		
I	0	0.0
II	0	0.0
III	2	6.7
IV	9	30.0
V	19	63.3
Place of delivery		
Home	24	80.0
Health facility	4	13.3
Not documented	2	6.7

ANC = antenatal care; TT = tetanus toxoid.

The routes of entry are shown in Figure 1. Traditional uvulectomy was the route of entry in 24 (80.0%) of the cases. Circumcision, infected umbilical cord and necrotizing fasciitis were other routes identified.

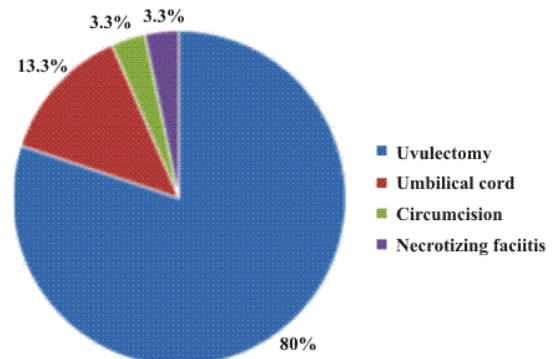


Figure 1: Portal of entry in 30 babies with neonatal tetanus.

The outcome revealed that 12 (40.0%) of the babies were discharge home while 2 (6.7%) left against medical advice. The mortality rate was 53.3%.

The mortality was significantly higher when the onset period was 48 hours or less and in the first seven days of admission as shown in Table 2. Mortality was not affected by the presence of co-morbidity.

Table 2: Relationship between some variables and death in 30 babies with neonatal tetanus.

Variable	Died (N=18) N (%)	Survived (N=12) N (%)	X ²	p value
Onset period (hours)				
≤ 48	14 (77.8)	3 (25.0)	7.90	0.005*
> 48	4 (22.2)	9 (75.0)		
Co-morbidities				
Anaemia	3 (16.7)	3 (25.0)	4.65	0.098
Sepsis	10 (55.5)	2 (16.7)		
No sepsis	5 (27.8)	7 (58.3)		
Duration of stay (days)				
≤ 7	17 (94.4)	0 (0)	22.45	0.000*
> 7	1 (5.6)	12 (100)		

Discussion

This study revealed prevalence rate of neonatal tetanus of 4.3% which is similar to the rate reported by Fetuga et al⁸ in Sagamu (4.2%) and 4.9% reported by Alhaji et al⁹ in Maiduguri Nigeria. The prevalence in our study is however higher than 0.67% reported by Emodi et al¹⁰ in Enugu. It is most unfortunate that despite over two decades of commitment by World Health Assembly to eliminate maternal and neonatal tetanus, it still remains a major cause of morbidity and mortality in our environment. The higher prevalence observed in this study could be multifactorial: low maternal tetanus toxoids immunization coverage, home delivery attended by traditional birth attendance, traditional harmful practices such as uvulectomy by traditional barbers and poor hygiene practice for umbilical cord care. Other authors⁸⁻¹⁰ has reported similar reasons for higher prevalence of neonatal tetanus.

Traditional uvulectomy served as an important route of entry in 80% of cases in this study, Onalo et al¹¹ in Zaria reported 65% having uvulectomy as port of entry, while in Kano Ladan et al¹² reported 37% as port of entry in their study. This is a traditional harmful practice, a practice in some tropical countries in which a traditional barber used an unsterile instrument to cut the uvula. This is done because of wrong belief that the uvula, when present, could be responsible for feeding difficulty and growth failure in children.

In this study, males were twice affected with neonatal tetanus than females. This is similar to previous reports by other authors.⁹⁻¹² There is no clear-cut explanation why more males presented with neonatal tetanus. Some authors gave reasons of male preponderance in some culture and society.⁹

The mortality rate of 53.3% in this study is similar to 51.0% reported by Ladan et al¹² in Kano. However, it is lower than the mortalities reported by Alhaji et al⁹ and Onalo et al¹¹ in Maiduguri and Zaria respectively. While Emodi et al in Enugu reported lower mortality rate of 31.7% among the neonate studied. The relatively higher survival of neonates in our study is attributed to the use of magnesium sulphate in addition to the use of other anti-convulsant drugs. Previous study shows that the use of magnesium sulphate has improves outcome.¹³

Mortalities mostly occurred within first one week of hospital admission, and in majority towards ends of first week. This is similar to report by other authors.¹¹ This is the time when autonomic instability usually set in.

Most of the parents belonged to the lower socioeconomic status. This is responsible for low maternal immunisation coverage, poor ante natal care attendance and delivery outside of health facility. This is explained by Osaghae et al¹⁴ that vicious cycles exists between low level of maternal education contributing to lack of ante natal care, low immunisation, delivery outside health facility, poor cord care, all resulted in persistence of neonatal tetanus in Nigeria.

Conclusion

The neonatal tetanus is still high in Jigawa and the factors responsible are traditional uvulectomy, low maternal tetanus immunization, poor ANC attendance and home delivery. The prevalence could be reduced or even eliminated by improved ANC attendance, increase immunization uptake among women of child bearing age, delivery by the skilled birth attendant and increase the level of public awareness on harmful traditional practices such as uvulectomy and hazard of tetanus infection.

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Conflict of interest: None

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