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Neonatal Tetanus in Benue-Plateau State

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Summary

Ame Idoko, (1975). *Nigerian Journal of Paediatrics*, **2** (**2**), 47. **Neonatal Tetanus in Benue-Plateau State.** The present retrospective study of neonatal tetanus in the Benue-Plateau State has revealed that the disease is less common in the state than in Lagos and Ibadan. Over a period of two years there were 230 cases admitted into 11 hospitals in the state. The mortality rate in the present series was similar to those reported elsewhere in the country. It is suggested that eradication of the disease may be achieved through: (*a*) compulsory active immunization of all primary school children, and pregnant women; (*b*) education of traditional birth attendants on the proper care of the cord.

NEONATAL tetanus is a common disease in most developing countries where ignorance, poverty and inadequate medical services prevail. The reported incidence of this disease in developing countries varies from 8 per cent in New Guinea (Schofield, Tucker, and Westbrook, 1961), to 14 per cent of all live births in Haiti, (Marshall, 1968). In Thailand, Stahlio, (1960) found that neonatal tetanus accounted for 38 per cent of all neonatal deaths. In Nigeria, previous reports on this condition have come mainly from the southern parts of the country (Jelliffe, 1950; Tompkins, 1958; Ogbeide, 1966; Daramola, 1968). The aim of the present study was to find out the prevalence of this disease in the Benue-Plateau State, which is in the middle belt of Nigeria.

Materials and Methods

The study was a retrospective survey of the cases of neonatal tetanus in 13 general hospitals throughout the state over a period of 2 years (1st January, 1972 to 31st December, 1973). Nine of these 13 hospitals belong to the state government. Three of the hospitals are located in the capital city, Jos (Fig. 1). As can be seen from the map, the hospitals are well spaced out throughout the geographic areas of the state. All these hospitals were visited by the author. In each hospital, the admission and discharge registers were examined for cases of neonatal tetanus. Where the registers were not adequately informative, the ward report books were examined. In some cases there was some doubt as to the correctness of the diagnosis. For instance, a child of the appropriate age with the diagnosis of "neonatal tetanus" might have been discharged in 5 days and reported as cured. In such a case, the case notes were retrieved and analysed, and the diagnosis accepted or rejected according to the facts recorded.

The information extracted from the records included date of admission, age on admission,

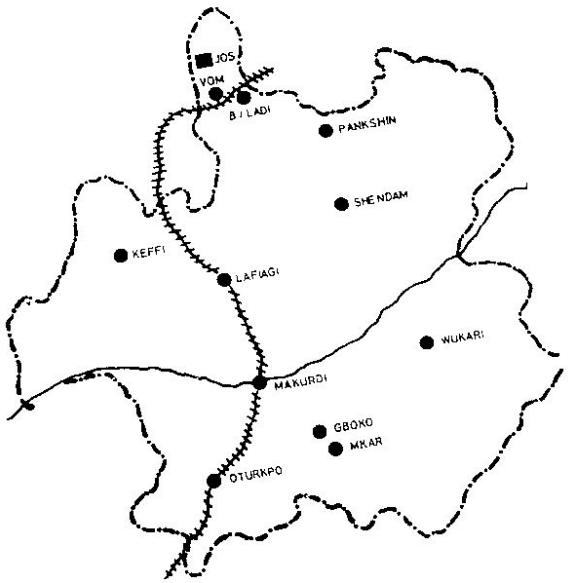

Fig. 1. Map of Benue-Plateau State showing the Location of the Hospitals

diagnosis, outcome, and date of discharge or death. In addition, a questionnaire was sent to all the hospitals for further information on the total number of admissions to the hospital, total number of deliveries, neonatal admissions, and total number of deaths over the 2-year period.

During the author's visit to each hospital an interview was held with several traditional birth attendants. The purpose of this interview was to find out the traditional methods of conducting labour and treating the umbilical cord, as well as to learn of the beliefs about birth, the placenta and the cord. The existence and recognition of tetanus in the community was also enquired into.

Results

Of the 13 hospitals, two were excluded on the grounds that their records were available for only 4 months and 12 months respectively. All the 13 hospitals returned the questionaires, although some were not completely filled. Thus in the detailed analysis, only the hospitals with complete data were included.

Table I shows the number of cases of neonatal tetanus in the respective hospitals. There were 237 cases admitted into 11 hospitals over the two-year period. 150 of these patients died in hospital, 52 recovered from the illness and 28 absconded before recovery. Thus, 150 out of 202 cases died in hospital, giving a case fatality rate of 74.3 per cent. There is little doubt that some of those that absconded must have died at home since some of them absconded only a few days after admission. On the other hand, several of those who absconded after 10 to 14 days in hospital were presumed to have survived. It will be observed that 174 (76 per cent) of the 237 cases were admitted to the hospitals at Mkar, (120 cases), Wukari (32 cases) and Makurdi (22 cases), all of which lie in the southern part of the state (Fig. I). While these 3 hospitals accounted for only 35 per cent of total admissions for the 2-year period, 76 per cent of all cases of neonatal tetanus were admitted into them.

The total number of admissions in ten of the hospitals, and that of neonatal tetanus during the same period are shown in Table II. There were 115,389 admissions of which 215 (0.19 per cent) were cases of neonatal tetanus. In eight of the hospitals (Table III) where complete information was available, there were 2,214 neonatal admissions in the two-year period. Of these, there were 203 cases (9.2 per cent) of neonatal tetanus.

The total number of deaths in nine of the hospitals compared to the number of deaths from neonatal tetanus are shown in Table IV. There were 135 deaths (2.8 per cent) due to neonatal tetanus out of 4,904 deaths.

The ages at death of the 230 cases of neonatal tetanus are summarized in Table V. Of these cases, the exact age at death was known in 104 and unknown in 126. The case fatality rate per cent was highest in the first 5 days of life being 92 per cent, followed by 86 per cent in the age group 6–10 days.

The seasonal distribution of the cases (Fig. 2) shows that although cases occurred throughout

TABLE I

Number of Neonatal Tetanus in 11 Hospitals in Benue-Plateau State

Hospital	*Total Number of Cases*
General Hospital Oturkpo	15
Evangel Hospital, Jos	4
General Hospital, Jos	11
O.L.A. Hospital, Jos	11
Vom Christian Hospital, Vom	6
General Hospital, Lafia	4
General Hospital, Makurdi	22
General Hospital, Wukari	32
General Hospital, Barakin Ladi	8
General Hospital, Shendam	4
Mkar Christian Hospital, Mkar	120
Total	237

TABLE II

Total Admissions and Cases of Neonatal Tetanus in Ten Hospitals

Hospital	*Total Admissions*	*No. of Neonatal Tetanus*	*Per cent of Total Admissions*
General Hospital, Lafia	5,546	4	0.07
General Hospital, Wukari	7,571	32	0.04
General Hospital, Shendam	8,038	4	0.05
General Hospital, Jos	20,289	8	0.04
O. L. A. Hospital, Jos	14,263	7	0.05
Evangel Hospital, Jos	4,296	4	0.09
General Hospital, Makurdi	12,306	22	0.17
Vom Christian Hospital, Vom	18,007	6	0.03
Mkar Christian Hospital, Mkar	20,131	120	0.60
General Hospital, Barakin Ladi	4,942	8	0.16
Total	115,389	215	0.19

TABLE III

Number of Neonatal Tetanus among 2,214 Neonatal Admissions in Eight Hospitals

Hospital	*Number of Neonatal Admissions*	*Number of Neonatal Tetanus*	*Per cent of Neonatal Admissions*
General Hospital, Wukari	66	32	48.5
General Hospital, Shendam	81	4	5.0
O.L.A. Hospital, Jos	132	7	5.3
Evangel Hospital, Jos	62	4	6.5
General Hospital, Makurdi	201	22	11.0
Vom Christian Hospital, Vom	186	6	3.0
General Hospital, Jos	863	8	0.9
Mkar Christian Hospital, Mkar	623	120	19.0
Total	2,214	203	9.2

TABLE IV

Hospital	*Total Deaths*	*No. of Deaths in Neonatal Tetanus*	*Case Mortality Rate Per cent in Neonatal Tetanus*
General Hospital, Lafia	240	3	1.3
General Hospital, Wukari	228	14	6.0
General Hospital, Shendam	383	3	0.8
O.L.A. Hospital, Jos	274	5	8.0
Evangel Hospital, Jos	299	2	0.7
General Hospital, Makurdi	620	14	2.3
Vom Christian Hospital, Vom	735	5	0.7
General Hospital, Jos	1,116	7	0.6
Mkar Christian Hospital, Mkar	1,009	82	8.1
Total	4,904	135	2.8

TABLE V

Age at Death of 230 Cases of Neonatal Tetanus

Age (day)	*Total No. of Cases*	*Outcome*			*Case Fatality Rate per cent*
		Recovered	*Died*	*Absconded*	
0–5	17	1	12	4	92.3
6–10	75	8	47	20	85.5
11–15	10	3	4	3	57.0
16–20	2	2	–	–	0.0
21–25	–	–	–	–	–
26–30	–	–	–	–	–
Age Unknown	126	38	87	1	69.6
Total	230	52	150	28	74.3

the year, there were more cases (172) during the wet months (April–October) than in the dry months of the year (November–March).

Table VI compares the mortality in the present study with those of other series.

Traditional Methods of Treating the Umbilical Cord.

The methods vary with the several tribes in the State. Among the Tiv tribe, the cord is cut with an unsterile razor blade or palm frond. Sheep's hair mixed in a pot with a special species of grass called "Gbatsumbo" is made into a powder and stored in a small gourd container. In some areas, salt is added to this mixture. The mixture, reconstituted into a soft paste with palm oil, is applied regularly to the cord until it falls off. After the cord falls off, it is washed frequently with a jet of warm water from the mouth. The cord is then dressed with breast milk, without any bandaging.

The method used among the Hausa communities in different parts of the state is to massage the cord with warm fingers and it is then cut with a razor. The cord is then massaged frequently with warm water until it falls off. Thereafter palm-kernel oil is applied regularly until healing takes place.

Two main methods are used by the Idoma tribe. Among one section of this tribe, the cord is cut with a razor, after massaging it with warm fingers. A mixture of rat faeces, broken bottle, and some leaves is heated in a pot until it burns into ashes. This is ground up and made into a paste with palm oil. The paste is applied to the cord until it falls off, after which the stump is dressed frequently with palm oil. Other Idomas cut the cord with a razor that is reserved for this operation only. The cord is dressed regularly with palm-kernel oil which is kept all the time in a small pot at the fire-side.

Among the other tribes such as the Birom, Angas, Ankwe and Yergam, several different methods are used. Generally, these methods include the use of fresh juice from certain herbs (Fiffiak in Angas), vegetable oil mixed with salt or animal oil (Maimadachi among the Birom). Most of them massage the cord with warm water when bathing the baby.

Discussion

Accurate information on the incidence of neonatal tetanus in African countries is lacking because of the absence of accurate vital statistical data. Studies on the disease in Africa including

TABLE VI

Mortality Rate in Neonatal Tetanus Reported by Various Authors

Author(s)		*Place*	*No. of Cases*	*Case Fatality Rate Per cent*
Tompkins	(1958)	Ibadan	141	86.6
Athavale and Pai	(1965)	India	319	73
Pinheiro	(1964)	Brazil	238	77
Wright	(1960)	South Africa	217	82
Pirame	(1963)	Upper Volta	56	87
Marshal	(1968)	Haiti	2,198	53
Ogbeide	(1966)	Lagos	154	67.5
Daramola	(1968)	Lagos	125	69.6
Present Study	(1975)	Benue Plateau State	202	74.3

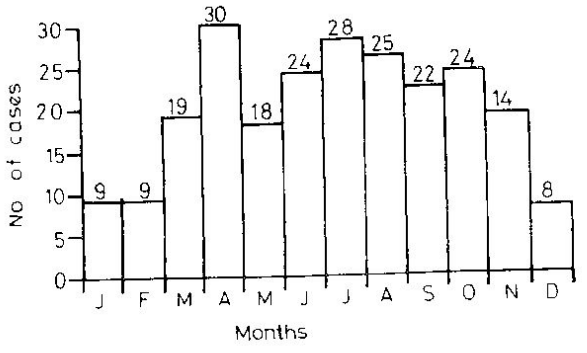

Fig 2.

the present one, are based on hospital admissions. However, there can be no doubt that the disease is a major paediatric health problem throughout Africa and other developing parts of the world.

One striking fact which has emerged from the present study is that the disease is much less common in the Benue-Plateau State of Nigeria than in the Lagos and Western States. In the city of Lagos, Ogbeide (1966) reported 154 cases (45 per cent) out of 246 neonatal admissions in a single Hospital over a two-year period, while Daramola (1968) reported 125 cases in two other hospitals within one year. Tompkins (1958) reported a similar high incidence (141 cases in a 2-year period) from the University College Hospital, Ibadan. In contrast, in the Benue-Plateau State, neonatal tetanus constituted 8.4 per cent of all neonatal admissions into eight hospitals over a period of 2 years. It also constituted only 0.2 per cent of all admissions into these eight hospitsls.

A high mortality of 74.3 per cent in the present study is similar to those reported in other series (Tompkins, 1958; Ogbeide, 1966: Daramola, 1968; Athavale, and Pai, 1965; Pinheiro, 1964). The depressingly bad prognosis among babies less than one week old reported by others is also emphasized by the findings in the present series. Saxena and Saxena (1965) from India, reported 100 per cent mortality in babies under 5 days old, while among babies 6 days old and over in Lagos, Daramola (1968) reported a mortality of 96.5 per cent. In the present series, the mortality in the age group 0–5 days was 92.3 per cent. However, the prognosis may not always be hopeless in this age group, for Barten (1969) has reported a mortality of 58.7 per cent in babies 0–6 days old.

Adeuja and Osunlokun (1971) who studied adult cases of tetanus in Ibadan, found that the lowest incidence occurred in the wet months of the year. Tompkins (1958) also at Ibadan, found

a lower incidence of neonatal tetanus in the wet than in the dry season. In contrast, the present study has revealed a lower incidence in the dry than wet season. There is as yet no satisfactory explanation for this disparity in seasonal variation.

The distribution of the disease within the state illustrates another interesting feature. Seventy-six per cent of all the cases were from 3 hospitals in the southern part of the state. Two of these hospitals (Mkar and Makurdi) are located in the Tiv-speaking areas, while the third is in Wukari which has a high population (up to 60 per cent) of Tiv-speaking people. On enquiry about the recongition of tetanus by the people, it was only in the Tiv language that there is a word for neonatal tetanus. It is called "Nombo" which is believed to enter the child through the umbilical cord. It is regarded as an invariable killer without hospital treatment. It is to be noted that the Tivs are about the only major ethnic group which use sheep's hair in treating the cord. Further studies are required into the role played by the 'sheep's hair' concoction in the comparatively high incidence of neonatal tetanus among the Tiv speaking tribe.

Although neonatal tetanus is apparently less common in the Benue-Plateau State than in some other parts of the country, it is an important disease since it accounts for 2.9 per cent of all deaths in the areas surveyed. Since the disease is preventable, there is a need for vigorous preventive measures to be taken throughout the country. In the present series, many of the babies were born in hospital and were discharged 12–48 hours after birth if the delivery was normal. Therefore, hospital delivery alone may not substantially influence the traditional methods of treating the cord.

The value of active immunization of the pregnant woman against tetanus in the prevention of neonatal tetanus has been amply demonstrated (Schofield, Tucker and Westbrook, 1961). Since only a small proportion of women in Nigeria who receive antenatal care in hospitals and clinics actually deliver their babies in these hospitals, the care of the cord continues to be left with traditional birth attendants. It is therefore, suggested that a programme of active antenatal immunization coupled with the education of traditional birth attendants on the proper management of the cord will substantially reduce the incidence of neonatal tetanus in Nigeria.

In the proposed Universal Primary Education scheme in Nigeria, it is hoped that all children will be actively immunized against tetanus. Indeed, it should be compulsory that all girls receive their last booster dose at leaving school. Then, if a booster dose were given during pegnancy, it may be predicted that if such a scheme as this is implemented neonatal tetanus will, in a period of 20 years, be eradicated in Nigeria.

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