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ORIGINAL ARTICLE

Neonatal Tetanus

ANALYSIS OF 108 CASES USING A SCORING SYSTEM

by

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Abstract

Analysis of 108 cases of Neonatal Tetanus by using a scoring system (Tjandra et al., 1974) revealed that 18 patients belonged to Grade I with a mortality rate of 5.6%; 43 belonged to Grade II with a mortality rate of 58.1%; and 47 belonged to Grade III with 91.5% mortality. The differences of mortality between the 3 groups are statistically significant. Mortality rate of 1973 was the lowest (50%) compared to that of 1972 (75%); 1974 (72.2%) and 1975 (61.4%). However, the number of patients belonging to Grade I in 1973 was the highest, 36.4%; whereas that of 1972 was 16.7%; 1974 was 11.1% and 1975 was 9.1%. Classification of severity in Neonatal Tetanus is therefore, not only important for selecting a "treatment of choice" by comparing mortality rates of those having the same grade of severity, but may be also very useful in determining the method of treatment for different levels of severity.

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Introduction

In an attempt to reduce the mortality rate of Neonatal Tetanus, a lot of therapeutic trials and managements have been conducted. It is indeed necessary to have a "treatment of choice" for this hazardous disease which in developing countries still continues to be a major child health problem. However, since many factors adversely affect the severity, evaluating the results of treatment only by comparing the mortality rates is unreasonable.

The purpose of this study is to find out whether a classification of severity is useful in the evaluation of mortalities and in determining therapeutic regimens for different levels of severity.

Materials and Methods

Records of 108 patients with Neonatal Tetanus admitted to the Pediatric ward of Gunung Wenang General Hospital, Manado, from January 1, 1972 through December 31, 1975, were analysed. Diagnosis was based on the presence of lockjaw (trismus), risus sardonicus, and if any, typical spasms observed by the Pediatric staff members. All patients were nursed in a special Neonatal Tetanus unit. Feeding was given through a polyethylene nasogastric tube with expressed mother's milk or artificial milk until the infant was able to suck well. Nursing care and medical treatment were essentially the same throughout the period, consisting of :

— A.T.S. 10.000 Units, single dose, intramuscularly, on admission.

— Procain penicilline 100.000 U/kg.b.w./day, intramuscularly, divided into 2 equal doses for 10 days.

— Diazepam (Valium) 10 mg/kg.b.w./day, orally, divided into 6 equal doses; and 6 times 2½ mg a day, intramuscularly.

— Treatment of umbilical stump was restricted to cleansing it with a 70% alcohol solution.

— Special attention was given to the cleaning of respiratory tract during and after spasms.

The severity was graded according to the scoring system (slightly modified) of the authors' classification of severity (Tjandra et al. 1974) :

A g e	: equal or less than 5 days	4.
	6 — 10 days	2.
	more than 10 days	1.
Spasms	: paroxysmal spontaneous	2.
	induced	1.
Cyanosis	:	2.
Rectal temperature higher than 39 degrees Centigrade	:	1.
Trismus and risus sardonicus	:	1.

Scoring was done in the first 2 days of hospitalization when usually all signs have already manifested. The severity was classified into :

Grade I (mild), if the total score was 2 - 5.

Grade II (moderate), if the total score was 6 - 7.

Grade III (severe), if the total score was 8 - 10.

Patients with concomitant infections e.g. Bronchopneumonia, Gastroenteritis etc. were excluded from this study.

Results

Classification of severity of 108 cases from January 1, 1972 until December 31, 1975 showed 18 patients (16.7%) belonged to Grade I, 43 patients (39.8%) belonged to Grade II, and 47 (43.5%) belonged to Grade III (Table 1).

TABLE 1 : *Mortality of Neonatal Tetanus According to Severity*

Grade	Number of cases	Died	Mortality
I	18	1	5.6%
II	43	25	58.1%
III	47	43	91.5%

X2 : 42.70 D.F. : 2 p : < 0.000001

Table 2 shows the annual mortality during the 4 years period. Compared to the others, mortality in 1973 was the lowest .(50%).

TABLE 2 : *Annual Mortality of Neonatal Tetanus from 1972 — 1975*

Year	Number of cases	Died	Mortality
1972	24	18	75 %
1973	22	11	50 %
1974	18	13	72.2%
1975	44	27	61.4%

Percentage of Grade I patients in 1973 was higher than in any other years. This can be seen in Table 3.

TABLE 3 : *Severity of Neonatal Tetanus from 1972 until 1975*

Year	Grade I	Grade II	Grade III
1972	16.7% (4)	58.3% (14)	25 % (6)
1973	36.4% (8)	31.8% (7)	31.8% (7)
1974	11.1% (2)	22.2% (4)	66.6% (12)
1975	9.1% (4)	40.9% (18)	50 % (22)

Discussion

Several methods of treatment showed different mortality rates, ranging from 39.1% to 87.8% (Nkrumah and Verma, 1971; Salimpour, 1971; Barten, 1971; Phatak and Shah, 1973). Without knowing exactly the severity of the disease in those patients, it is unreasonable to conclude that a lower mortality rate must be the result of a better method of treatment.

Applying our scoring system of classification of severity to 108 cases of Neonatal Tetanus from 1972 until 1975 resulted in 3 categories of severity of which the differences of mortality between them are statistically very significant ($p < 0.000001$). Our patients mostly belong to the severe category. Other methods of classification of severity for Neonatal Tetanus are those of Patel and Joag (1959) and Jenkins and Luhn (1962). We must acknowledge that our classification of severity may not satisfy everyone, but it has the simplicity to be used to classify more accurately different levels of severity of Neonatal Tetanus.

With an overall mortality of 63.9%, our series is promising, although, it is, of course, impossible to compare with the others in terms of severity. Recognizing disease severity before judging mortality is of utmost important. Looking into mortality rates of our series from 1972 until 1975 (Table 2), one would certainly consider that the method of treatment in 1973 was better than in any other years, since it has the lowest mortality. But it is not exactly true, because our method of treatment was essentially unchanged throughout the period.

The fact is that in 1973 there was a relatively greater number (36.4%) of

Grade I patients (Table 3). We believe that a high percentage of mild cases in a series is the most important factor that accounts for the low mortality. Different mortalities ever published, therefore, might not be due to the methods of treatment which are nearly the same, but are rather brought about by the different severity of their patients which regretfully has never been stated.

Method of treatment in our study gives a very good result for Grade I, a fair result for Grade II, but very poor result for Grade III (Table 4).

TABLE 4 : *Annual Mortality of Neonatal Tetanus According to Severity*

Year	Grade I		Grade II		Grade III	
	No	Mo	No	Mo	No	Mo
1972	4	25%	14	79%	6	100%
1973	8	0%	7	57%	7	100%
1974	2	0%	4	50%	12	92%
1975	4	0%	18	39%	22	91%

Nevertheless, is the very low mortality of Grade I (5.6%) really caused by our method of treatment? Would similar results be achieved if the method is simplified? This is due to the fact that until now the efficacies of Anti tetanus serum and antimicrobial drugs for Neonatal Tetanus remain controversial (McCracken Jr. et al., 1971; Shirkey, 1972). For Grade I, perhaps, a similar result might also be obtained without them. For Grade II, a better method of treatment is unquestionably necessary. Intermittent Positive Pressure Ventilation which for developing countries is still impracticable, may be the only and real solution for Grade III. Searching a better yet conservative medical treatment and management for Neonatal Tetanus, is not only urgent but also judicious.

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