

TREATMENT OF TETANUS NEONATORUM IN A RURAL SETTING

YONG YOON FOH

SUMMARY

Tetanus, especially tetanus neonatorum (T.N.) continues to be a significant medical and social problem in the developing countries. The case mortality rate remains very high even in the 'developed' countries, varying from 60-80 percent in various reports, and even higher in the case of tetanus neonatorum.^{1,2,3}

Sanders et al had introduced the method of intrathecal injection of antitetanus serum (ATS) in 1976 and have achieved very encouraging results.^{4,5}

As the conventional treatment of tetanus neonatorum had achieved very poor result, even in the very sophisticated centres, a case of tetanus neonatorum admitted to Cottage Hospital Semporna in Sabah had been treated with intrathecal ATS since June 1982. This paper reviews the results of this new approach to tetanus neonatorum treatment as compared to cases treated conventionally.

MATERIALS AND METHODS

Since June 1982, all cases of tetanus neonatorum admitted to Hospital Semporna had been treated with intrathecal ATS.

Full history and physical examinations were done and recorded. If clinical diagnosis of tetanus neonatorum was made, the patient was admitted.

Lumber puncture was performed, and CSF sent for C/S and FEME. 1500 to 2500 units of ATS was administered intrathecally, using the same needle. Blood was sent for se calcium, glucose, electrolysis (to Tawau). Valium at 0.33 mg/kg given iv to stop the muscle spasms. Stat does only. Naso Gastric (N/G) tube was inserted for administration of medication and milk feeds. Medication consisted of Phenobarbitone 2 mg/kg q6H and Largactil 0.1 mg/kg q6H. Doses were increased slowly till all spasms were abolished. The doses were staggered so that patient would receive one of the two drugs every 3 hours. Iv fluids (Paeds Solution) was given at 150-180 ml/kg./24h for one day only and would be stopped the second day. Iv penicillin at 200,000 units per kg per 24h was given in 4 divided doses. Feeding with expressed breast milk (EBM) given via N/G tube was started on the second day of admission in usual amounts. If not available, then the babies would be given Nan/Special formula in the usual amount. The iv penicillin was given as intramuscular after 24hr and stopped after 10 days.

If complications arose, such as abdominal distension, vomiting of feeds and frequent spasms then the oral feeds were stopped and IV fluids re-administered. Tepid Sponging Nasopharyngeal Suction was done PRN and gently. The medications would be reduced gradually after the 10th day of admission (They were usually stopped at 16-18 days after admission.) Babies were discharged only if they were sucking well, there were no obvious muscle spasms, afebrile and the general condition well. Cases were reviewed at one month after discharge.

Medical records of this hospital were also reviewed to select cases of tetanus neonatorum treated prior to June 1982. These are presented in

Dr Yong Yoon Foh
Pejabat Perubatan, Hospital Daerah,
Semporna.

TABLE I
RESULTS OF 8 CASES OF TETANUS NEONATORUM TREATED BY TWO DIFFERENT APPROACHES/
METHODS. BETWEEN JUNE 1981 TO SEPTEMBER 1982 IN SEMPORNA, SABAH.

Age at onset of first symptom (days)	Method of cord cutting	First symptoms	Duration bet. onset of 1st symptom and muscle spasms	Incubation period (days)	Highest temperature within 24 hrs of admission	Severity of illness ⁶	Outcome of treatment	Duration of hospital stay (days)	Follow-up at one month	Method of treatment
Before June 1982	Bamboo unsterile	Inability to suck	< 24hrs	7	within Normal limits	Gr 4	Died	NR	NR	Conventional
7	Bamboo unsterile	Mobility to suck	< 24hrs	7	"	GR4	Died	NR	NR	"
12	Knife, unsterile	inability to suck	< 24hrs	12	"	GR 3	Alive	31 days	Untraceable	"
5	Blade unsterile	Inability to suck and muscle spasms	< 24 hrs	5	Unknown	-	Died	NR	NR	"
After June 1982	Bamboo unsterile	Inability to suck	< 24hrs	5	within normal limits	GR 4	Alive	16	Well	Intrathecal ATS
6	Bamboo unsterile	Inability to suck, muscle spasms	< 24hrs	6	"	GR 4	Alive	16	Well	"
5	Knife, rusty	Inability to suck	< 24hrs	5	< 38°C	GR 5	Alive	18	Well	"
7	Knife, Unsterile	Inability to suck	< 24hrs	7	< 38°C	GR 5	Alive	18	Well	"

Source:

1. Medical Records of Cottage Hospital Semporna.
2. Personal Data.

Footnote:

- NR — Not Relevant.
2. Severity of Case 4 not determined as highest temperature not recorded.

Table I, together with cases treated from June 1982.

RESULTS

Results are presented in Table I. All cases treated by intrathecal injection of ATS survived (100 percent). As compared to one in 4 cases treated conventionally (25 percent). This was statistically significant ($P < 0.001$).

All in all, 8 cases were available for comments. Four cases were treated by the intrathecal administration of ATS, (I/T ATS) the rest were treated conventionally.

The cases were comparable with regard to age of onset and severity of illness. Hence a comparison of

the outcome of the different treatments was meaningful. Severity grading was done using criteria as listed by Khoo B.H. ⁶

All the cases encountered were of the more severe grades.

The durations of hospital stay was also much shorter for the cases treated with I/T ATS than the lone surviving case treated conventionally averaging 17.3 days compared with 31 days.

No neurological deficits were detected at follow up at one month for those cases treated with intrathecal injection of ATS.

DISCUSSION

One would expect tetanus neonatorum to have

disappeared from the Malaysian medical scene in 1982, but this is not so, and would not be so for many years to come, as long as the umbilical cord is being cut by bamboo, and cowdung dressing is used for the stump or wound, tetanus neonatorum would be with us.

Case mortality remains extremely high and even more so in developing countries. Most authors or authorities still advocate aggressive therapy such as total paralysis and IPPV.^{3,7} In a rural setting, these facilities are not available and would not be there for many years to come. Cottage Hospital in Semporna has no facility even for BUNSE or ventilation and anaesthetists and HB is being measured by colorimeter.

Tetanus neonatorum cases have been treated using the method introduced by Sanders^{4,5} with equally encouraging results in our hospital with very limited resources and facilities. Several factors may be responsible. Intrathecal administration of ATS may have prevented the tetano-spasmin from reaching the CNS and hence blocking the action of the toxin. Early N/G feeding using EBM could have prevented the frequent electrolytes and acid-base imbalances often encountered in those given iv fluids totally. EMB also provided the necessary nutrients. Round the clock, intensive nursing care with frequent, gentle nasopharyngeal suction are equally important, if not the most crucial factor.

Four cases of tetanus neonatorum were

successfully treated.

It is hoped that this paper will show that there was an alternative approach to managing tetanus neonatorum, and arouse interest in Sanders'^{4,5} works.

This article is dedicated to the Nursing Sisters and Staff of Cottage Hospital Semporna, Sabah. I am indebted to Puan Nurul who typed the manuscript, and Prof Hugh Jolly, who encouraged the writing of this article.

REFERENCES

- ¹ Armitage P Clifford R: Prognosis in tetanus: Use of data for Therapeutics *J. Infect. Diseases* 1978: 178(1) 1-8.
- ² Burnett IV: Tetanus: In: Heoprich P D (ed) *Infectious Diseases*. Ed 2. Hagerstown, MD, Harper and Row 1977.
- ³ Klinger H. Tetanus of the newborn. *JAMA* 218: 1437. 1971.
- ⁴ Sanders R K M, Joseph R. Tetanus — Successful treatment in a rural situation *Tropical Doc* 1977: 7: 99-104.
- ⁵ Sanders R K M, Joseph R, Martyn B, Peacock M L. Intrathecal antitetanus serum (horse) in the treatment of tetanus. *Lancet* 1977; 1.
- ⁶ Khoo Boon Hock: *Hand Book of Paediatric Therapeutics* 1981. Neonatal tetanus, Pg 82.
- ⁷ Feigin R D. Tetanus: in *Nelson's Textbook of Paediatrics*. 1979.