

## ANTITOXIN TREATMENT OF TETANUS

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### Abstract

A random study of 300 cases suffering from tetanus was conducted at the Lady Reading Hospital Peshawar. Three groups each of hundred patients were formed depending on the dose of A.T.S. administered. No particular difference was noted in the mortality of groups receiving 100,000 units and 20,000 units. A dose of 20,000 units is thus sufficient for most of the tetanus cases. 100,000 units A.T.S. may be given to post-partum and abortion cases where the infection is more generalised and severe.

### Introduction

The incidence of tetanus has decreased tremendously in the western world, which could be attributed to individual immunization. Soldiers in active service immunized against tetanus show a reduced incidence of 10 in 3,000,000. (Eckman 1963). Tetanus has become relatively rare in Britain. Twenty cases in 1972 and twenty three in 1973 were reported from England and Wales (Lancet 1974). The reports from U.S.A. show 352 tetanus cases in the years 1968 and 1969 (Buchanan et al., 1970). In France and Japan tetanus is considered to be an age old disease (Ebisawa, 1971). In the under-developed countries, tetanus is still quite frequently encountered. Statistics show that nearly half a million people die of tetanus each year throughout the world (Eckman 1973), with a higher mortality rate in infants.

### Material and Methods

A study was carried out on 438 cases of tetanus admitted in the infectious diseases ward of Government Lady Reading Hospital, Peshawar, 15th July 1975 to 15th December, 1976. 300 of these cases were followed up whereas 138 patients had to be excluded as some of them left the hospital against medical advice and a few who were referred from other hospitals had already received the antitoxin. The 300 patients included in this study were divided into three groups of 100 each. Group one was given a total of 100,000 units A.T.S., half the dose intravenously and the other half intramuscularly. Group two received a total dose of 20,000 units A.T.S. by the same technique and group three had received only 10,000 units A.T.S. intramuscularly. All the three groups had a similar supportive therapy of 100,000 units crystalline Penicillin intramuscularly, twice daily for seven days and Diazepam 60 to 300 mg, in

divided doses daily till the convulsions were controlled. A few cases were given chlorpromazine in an infusion form. None of the patients were transferred to the intensive care unit nor did any require tracheostomy. All patients were kept in cubicals measuring ten square feet equipped with four beds.

Table I: Age and Sex Distribution

Age	Group I	Group II	Group III
Infants .. ..	20	22	22
Children .. ..	26	38	37
Adults .. ..	54	40	41
Sex			
Male	63	57	61
Female .. ..	37	43	39

Table II: Mean Incubation Period and SITE of Wound in each Group.

	Group I	Group II	Group III
Mean Incubation Period	11	10	10
Site of Wound .. ..			
Head and Neck	13	21	20
Trunk .. ..	38	36	34
Limbs .. ..	37	34	40
No History .. ..	12	9	6

Table III: Complications of Tetanus

System	Complication	Group I	Group II	Group III
Respiratory	Bronchopneumonia	26	14	17
C.V.S.	Hypotension	2	1	Nil
	Hypertension	0	1	1
C.N.S.	Bell's Palsy	2	4	Nil
	Retention Urine	3	2	2
Autonomic	Constipation	16	10	8
	Diarrhoea	Nil	1	2
	Sweating	6	6	7

Table IV: Tetanus Mortality

	Group I (100,000)	Group II (20,000)	Group III (10,000)
Infants .. ..	55%	86.36%	68.18%
Adults .. ..	27.5%	23.07%	39.74%
Total .. ..	33%	37%	46%

Most of the patients belonged to Peshawar and a few came from the tribal areas. Among the males, majority were farmers while most of the

females were housewives. Table I shows the age and sex distribution and table II shows the mean incubation period and site of wound. Complications are given in table III with bronchopneumonia being the commonest encountered, and table IV gives the mortality in each group.

Discussion

Antitoxin (horse serum) was first introduced in 1890 by Behring and Kitasato. Until 1910 the dose of A.T.S. varied from 50 to 100 ml (Luxis 1908). Since the introduction of refined A.T.S. the dose has been reduced. Dean (1917) recommended 10,000 units. Anders (1920) proposed 10,000 units intravenously and 3000 to 5000 units intrathecally. Several publications appearing between 1935 and 1955 have suggested large doses of A.T.S. ranging between 4,00,000 units to 35,00,000 units (Cables, 1938; Ghosh, 1950; Khosla and Bhait, 1953). Recent editions of various text books of medicine have advised A.T.S. doses ranging from 10,000 units to 20,000 units.

The experience from this study of 300 cases showed that there was no significant difference in the mortality rates of patients who received 20,000 units of antitoxin and those who received 100,000 units. The mortality rate was higher in patients who were given 10,000 units. It was also noted that post delivery and abortion cases suffering from a severe attack of Tetanus do better if given A.T.S. in a dose of 100,000 units. Similar observations were made in a study carried out in Bombay which proved that the difference in mortality rates of patients receiving 50,000 units and 10,000 units was insignificant (Vakil et al., 1968).

It could thus be recommended that 20,000 units A.T.S. may be given to most of the tetanus cases, and a dose of 100,000 units would be advisable for post partum and abortion cases.

References

Anders, J.M. A text book of medicine. Philadelphia, 1920 p. 306.  
 Buchanan, T.M., Brooks, G.F., Martin, S. and Bennett, J.V. (1970) Tetanus in the United States 1968 and 1969, news from the centre for disease control. J. Inf. Diseases, 122:564.  
 Cables, H.A. (1938) Amount of antitoxin used in a case of tetanus. J.A.M.A., 110: 1271.  
 Dean, H.R. (1917) A report on 25 cases of Tetanus. Lancet, 1:673.  
 Ebisawa, I. (1971) Mortality and sex difference of tetanus in Japan. Jap. J. Exp. Med., 41:21.  
 Eckmann, L. Tetanus prophylaxis and therapy, New York, Grune Stratton, 1963.  
 Ghosh, S.M. (1950) Tetanus-its management. J. Indian Med. Ass., 19:328.  
 Khosla, H.L. and Bhatt, A.N. (1952) A study of tetanus in Medical College Hospital, Nagpur. J. Indian Med. Ass., 22:52.  
 Lukis, C.P. (1908) Cases from the Medical College Hospital, Calcutta. Analysis of 39 cases of Tetanus (Report No. 19, p. 252) Ind. Med. Gaz., 18:243.  
 Vakil, B.J., Tulpule, T.H., Armitage, P. and Laurence, D.R. (1968) A comparison of the value of 200,000 I.U. of tetanus antitoxin (horse) with 10,000 I.U. in the treatment of tetanus. Clin. Pharm. Ther., 9:465.