

## 'Tetpro Score' for Evaluation of Progression in a Case of Tetanus

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### Abstract

Tetanus is an acute disease manifested by skeletal muscle spasm and autonomic system disturbance. A case of tetanus is a medical and social concern due to its high prevalence in developing countries. Tetanus as a disease is very distressing for the caretakers of the patient due to its painful and distressing presentation. A scoring system to monitor the progression or deterioration in the course of the disease was a felt need of the hour. 'TETPRO' scoring system was devised for the same. The scoring involved 10 parameters involving assessment of motor and autonomic symptoms. Using this it was very comfortable to monitor the progression of the disease and also for daily counselling the family members regarding the response of the patient and possible outcome.

**Keywords:** Tetanus; Progression; Deterioration.

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### Introduction

Tetanus is an acute disease manifested by skeletal muscle spasm and autonomic system disturbance. Tetanus is caused by powerful neurotoxin produced by *clostridiumtetani* bacteria. The disease continues to have a substantial health impact in developing countries. The worldwide incidence of tetanus is approximately 1 million cases per year, with a mortality rate of 20% to 30% [1].

### Aim

Most cases of tetanus occur in incompletely vaccinated or unvaccinated individuals. Prognostication and monitoring the disease has been a handicap in the department of Emergency medicine and Critical care. Scoring system for clinical case of tetanus was devised for this purpose.

### Discussion

The Centers for Disease Control and Prevention defines tetanus as a syndrome of acute onset of

hypertonia and/or painful muscular contractions (usually of the muscles of the jaw and neck) and generalized muscle spasms without other apparent medical cause as reported by a health professional [2].

We in the department of Emergency Medicine, JJMMC, Davangere encountered five cases of Tetanus diagnosed based on history and clinical presentation over a period of one year in 2016 - 2017. Four patients had a history of trivial trauma and one had a history of dental extraction prior to admission in emergency department During the course of treatment patient were kept in isolation and were administered with Tetanus toxoid and tetanus immunoglobulin based on their vaccination status. Metranidazole 400mg and symptomatic treatment was given as per protocol [3].

During the course of treatment we encountered inconvenience regarding prognostication and monitoring the progression/deterioration of the disease process. It was also felt that objective assessment of the disease process would help in counselling the patient's caretakers regarding the status of the disease and possible outcome which forms the important part of patient-doctor interaction

During the study of literature we found that notable contribution has been done in this regard. Patel and Joag's [4] scoring system classified tetanus into mild moderate and severe. This scoring system had limited parameters and parameters were felt not discrete. The scoring system recommended by Singh et al [5] and 8 point scoring system which was devised by S SSidhartha et al [6] were also reviewed. It was felt that scoring pattern involved parameters that were more subjective in nature and chance of inter-observer variation in critical analysis of subjective symptoms will be a possible pit hole.

We decided to devise a scoring system for monitoring a case of tetanus keeping into account subjective and objective analysis in a case of tetanus. The parameters were selected that were discrete and a scoring pattern with no much inter observer variation possible and with no ambiguity in recognising the parameters involved.

The scoring involved 10 parameters involving assessment of motor and autonomic symptoms of

Tetanus keeping in mind the varied presentation of the disease process. Each parameter if found positive is given a score of 1 or 2 as described in Table 1. Any parameter that is normal is marked zero. Total score range from '0' to '15'. Higher score indicates deterioration in the course and is a predictor of poor prognosis/outcome. Lesser the score better the prognosis.

Our first patient in whom we used this scoring system (Table 2); patient recorded a score of 11/15 on the day 1 of admission. On day 3 the score was 6. Subsequently 9<sup>th</sup> and 10<sup>th</sup> day the score was 1 and 0 respectively. Our second patient recorded a score of 10/15 on the day of admission, on day 6 the score was 5/15 and on day 9 the score was '0'. Patients were shifted to general ward/ general medicine and subsequently discharged home.

The limitation during the process of devising this score was that only a small number of cases were taken into account to devise the 'Tetpro' scoring system. Keeping in acceptance of this fact and also the rarity

Table 1: Tetpro scoring chart

Department of Emergency Medicine, JJMMC Tetpro Scoring										
	Day	-	-	-	-	-	-	-	-	-
1	Lock Jaw	-	-	-	-	-	-	-	-	-
	Inability to insert finger in oral opening	-	-	-	-	-	-	-	-	-
	Normal-0									
	<2 Finger-1									
	<1 Finger-2									
2	Flexion difficulty of Neck	-	-	-	-	-	-	-	-	-
	Yes-1	-	-	-	-	-	-	-	-	-
	No-0									
3	Difficulty swallowing	-	-	-	-	-	-	-	-	-
	Yes-1	-	-	-	-	-	-	-	-	-
	No-0									
4	Upper limb rigidity	-	-	-	-	-	-	-	-	-
	Difficulty in flexion from anatomical position	-	-	-	-	-	-	-	-	-
	0-Normal									
	1->30 degree									
	2-<30 degree									
	Lower limb rigidity	-	-	-	-	-	-	-	-	-
	Difficulty in flexion from anatomical position	-	-	-	-	-	-	-	-	-
	0-Normal									
	1->30 degree									
	2-<30 degree									
5	Painful Spasms	-	-	-	-	-	-	-	-	-
	Yes-1	-	-	-	-	-	-	-	-	-
	No-0									
6	Abdominal Guarding	-	-	-	-	-	-	-	-	-
	Yes-1	-	-	-	-	-	-	-	-	-
	No-0									
7	Able to sit from supine position	-	-	-	-	-	-	-	-	-
	0-Normal	-	-	-	-	-	-	-	-	-
	1-Sit with help									
	2-Inability to sit with help									
8	Tachycardia/Bradycardia	-	-	-	-	-	-	-	-	-
	Yes-1	-	-	-	-	-	-	-	-	-
	No-0									
9	Hypertension/Hypotension	-	-	-	-	-	-	-	-	-
	Yes-1	-	-	-	-	-	-	-	-	-
	No-0									
10	Sweating(Unexplained)	-	-	-	-	-	-	-	-	-
	Yes-1	-	-	-	-	-	-	-	-	-
	No-0									
11	Total Score	-	-	-	-	-	-	-	-	-

**Table 2:** Illustration of Tetpro scoring in a patient

Tetpro Scoring		-	-	-	-	-	-	-	-	-	
	Day	1	2	3	4	5	6	7	8	9	10
1	Lock Jaw	2	2	1	1	1	1	0	0	0	0
	Inability to insert finger in oral opening	-	-	-	-	-	-	-	-	-	-
	Normal-o	-	-	-	-	-	-	-	-	-	-
	<2Finger-1	-	-	-	-	-	-	-	-	-	-
	<1Finger-2	-	-	-	-	-	-	-	-	-	-
2	Flexion difficulty of Neck	1	0	0	0	0	0	0	0	0	0
	Yes-1	-	-	-	-	-	-	-	-	-	-
	No-0	-	-	-	-	-	-	-	-	-	-
3	Difficulty swallowing	1	0	0	0	0	0	0	0	0	0
	Yes-1	-	-	-	-	-	-	-	-	-	-
	No-0	-	-	-	-	-	-	-	-	-	-
4	Upper limb rigidity	0	0	0	0	0	0	0	0	0	0
	Difficulty in flexion from anatomical position	-	-	-	-	-	-	-	-	-	-
	0-Normal	-	-	-	-	-	-	-	-	-	-
	1->30 degree	-	-	-	-	-	-	-	-	-	-
	2-<30 degree	-	-	-	-	-	-	-	-	-	-
	Lower limb rigidity	2	2	1	1	1	1	0	0	0	0
	Difficulty in flexion from anatomical position	-	-	-	-	-	-	-	-	-	-
	0-Normal	-	-	-	-	-	-	-	-	-	-
	1->30 degree	-	-	-	-	-	-	-	-	-	-
	2-<30 degree	-	-	-	-	-	-	-	-	-	-
5	Painful Spasms	1	1	1	1	1	1	1	0	0	0
	Yes-1	-	-	-	-	-	-	-	-	-	-
	No-0	-	-	-	-	-	-	-	-	-	-
6	Abdominal Guarding	0	0	0	0	0	0	0	0	0	0
	Yes-1	-	-	-	-	-	-	-	-	-	-
	No-0	-	-	-	-	-	-	-	-	-	-
7	Able to sit from supine position	2	2	2	2	2	2	2	1	1	0
	0-Normal	-	-	-	-	-	-	-	-	-	-
	1-Sit with help	-	-	-	-	-	-	-	-	-	-
	2-Inability to sit with help	-	-	-	-	-	-	-	-	-	-
8	Tachycardia/Bradycardia	1	1	1	1	1	1	1	1	1	0
	Yes-1	-	-	-	-	-	-	-	-	-	-
	No-0	-	-	-	-	-	-	-	-	-	-
9	Hypertension/Hypotension	0	0	0	0	0	0	0	0	0	0
	Yes-1	-	-	-	-	-	-	-	-	-	-
	No-0	-	-	-	-	-	-	-	-	-	-
10	Sweating(Unexplained)	1	0	0	0	0	0	0	0	0	0
	Yes-1	-	-	-	-	-	-	-	-	-	-
	No-0	-	-	-	-	-	-	-	-	-	-
	Total Score	11	8	6	6	6	5	5	2	2	0

of a case of tetanus presenting to Emergency department in daily practise the 'Tetpro' scoring system is open for further validation and discussion

**Conclusion**

In our experience with the patient and the scoring system we used, we found it very comfortable to monitor the progression of the disease and also for the daily counselling of the anxious family members regarding the response of the patient and possible outcome. In a developing country like India, recognising and treating a case of tetanus is a medical challenge and the scoring system we devised will help in its own way in this direction. The subject is open for discussion/acceptance and further validation.

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