

COMPLICATIONS IN PATIENTS ADMITTED WITH TETANUS IN GENERAL ICU AND MEDICAL DEPARTMENT OF LADY READING HOSPITAL PESHAWAR

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ABSTRACT

Background: Tetanus remains a major health problem in the developing world. The aim of this study was to evaluate the complications in patients admitted with tetanus.

Methodology: A six months cross-sectional study of Ninety one cases of tetanus was conducted in the Intensive Care Unit (ICU) and Medical Departments of Lady Reading Hospital, Peshawar, Pakistan, between August 2012 and February 2013. Most of the patients were males 61 (67.03%) and male to female ratio was 2:1. There were 64 cases of tetanus patients having age above 30 years. Relevant data was collected from the patient's record by means of a structured questionnaire.

Results: Results of 91 patients were analyzed, n=51 (56.04%) had localized, n=2 (2.21%) had cephalic while n=38 (41%) had generalized type of tetanus. The severity of tetanus was categorized as: severe in n=22 (24.18%), moderate in n=26 (28.57%) and mild in approximately n= 22 (24.18%). Approximately n=37 (40.66%) had positive history of wound/injury while n=54 (59.34%) had no history of any minor or major wound/injury in near past. Out of all 91 tetanus patients, the following complications were noticed; sepsis in n=14 (15.38%), aspiration pneumonia in n=28 (30.77%), laryngospasm in n=19 (20.88%), break in bone in n=2 (2.2%), disability in n=25 (27.47%), acute renal failure in n=24 (26.37%), respiratory failure in n=33 (36.26%), hospital acquired infections in n=32 (35.16%), dysautonomias in n=53 (58.24%), and sudden cardiac arrest in n=25 (27.47%).

Conclusion: Our study concludes that most of the tetanus patients were older than 30 years had high rate of complications due to the diseases itself or may be contributed to the management of tetanus cases. Prophylactic use of antibiotics and treating tetanus patients in a well highly equipped Intensive Care Unit is recommended to avoid complications and high mortality rate.

Key Words: Tetanus, Complications, Mortality, Intensive Care Unit, Lady Reading, Hospital, Peshawar

INTRODUCTION

Tetanus is a life-threatening but preventable disease caused by an exotoxins-mediated disease, caused by *Clostridium tetani*, which produces two exotoxins; hemolysin/tetanolysin, and tetanospasmin¹. Tetanospasmin interferes with neurotransmission at spinal synapses and acts on sympathetic nervous system resulting in autonomic dysfunction² while tetanolysin damages local tissue and provides optimal conditions for bacterial multiplication³. Tetanus cases have declined to less than 95%, and ultimately deaths from tetanus have declined⁴.

Tetanus disease has been known to man since the 14th century when John of Arderne, an English surgeon, described a case of tetanus following a gardening injury. While the incidence of tetanus has declined dramatically

in the United States, the case fatality rate is still about 20-30% and increases to 50% for those older than 60 years of age⁵. Tetanus remains one of the major public health hazards of the developing world. Previous studies in Nigeria indicate that mortality ranged from 26% to 60%. Mortality is much lower in the developed world because of the availability of facilities for intensive care of cases, unlike in most developing countries^{4,6,7}.

Tetanus has a high mortality rate, even in high tech centres and in Intensive Care Units (ICU). In spite of having suitable equipment available with which to treat tetanus, mortality is high, mainly because of dysautonomias⁸. Spasm may be precipitated by minimal stimuli such as noise, light, or touch and last from seconds to minutes. They can be painful or dangerous, causing apnea, fractures or rhabdomyolysis⁵. Death results from aspiration, hypoxia, respiratory failure, cardiac arrest or exhaustion⁹.

The common complications of tetanus include airway obstruction, aspiration pneumonia, respiratory arrest, dysphasia, cardiac arrhythmias, and urinary retention etc and general management includes complete bed rest, quiet dark rooms, high sedation and mechanical ventilation¹⁰. In severe cases of tetanus,

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life-threatening respiratory and cardiovascular complications can present with troubling rapidity following the initial diagnosis and admission to the hospital. Respiratory failure may occur as a result of muscle rigidity and reflex muscle spasm that characterizes the disease or secondary to hypoxia following atelectasis and pneumonia⁶.

Pakistan is a developing country and thus having high prevalence of tetanus along so this cross sectional study was formulated to analyze the various complications in patients admitted with tetanus in general Intensive Care Unit and Medical Department of Lady Reading Hospital Peshawar Pakistan and to provide relevant information to the physicians regarding tetanus management and prevention of complications in tetanus patients.

MATERIAL AND METHOD

A six months cross-sectional study of ninety one cases of tetanus was studied in the Intensive Care Unit (ICU) and Medical Department of Lady Reading Hospital, Peshawar, Pakistan; between August 2012 and February 2013. All the tetanus patients who were admitted in Intensive Care Unit (ICU) and Medical Department were selected while those who were referred from other wards were excluded from the study. Relevant secondary data were collected from the patient's and ward records, through a structured questionnaire regarding complications in tetanus patients along with different numerical and categorical variables. Approval from the ethical board was taken along with confidentiality of patient's records and patients were informed that data was collected just for study purpose. Microsoft Word 2007 and SPSS 16 were used for statistical analysis. Data was presented in form of tables and graphs.

RESULTS

Our study results showed that most of tetanus patients were males (67.03%), while the remaining were females (32.97%). Only 29.67% were below 30 years while 70.33% were above 30 years of age. The male to female ratio was approximately 2:1. The age of tetanus patients and history of injury/wound is shown in Table 1.

Table 1: Age of tetanus patients and history of injury (n=91)

Variable		Male	Female	Total
Age in Years	< 18 years	18	9	27
	> 18 years	43	21	64
	Total	61	30	91
History of Injury	Yes	32	5	37
	No	45	9	54
	Total	77	14	91

The percentages of type of tetanus and severity of tetanus patients admitted in LRH Peshawar are shown in Figures No 1 & 2 respectively. Out of all tetanus patients, the following complications were observed; sepsis, aspiration pneumonia, laryngospasm, break in bone/fracture, disability, acute renal failure/rhabdomyolysis, respiratory failure/distress, hospital acquired infections, dysautonomias, arrhythmias and sudden cardiac arrest; as were shown in Table 2.

Table 2: Type of complications among tetanus patients (n=91) admitted in LRH Peshawar

Sr. No	Type of Complications	n	%
1	Sepsis/ Septic Shock	14	15.38
2	Aspiration Pneumonia	28	30.77
3	Laryngospasm	19	20.88
4	Break in The Bone (Fracture)	2	2.20
5	Disability	25	27.47
6	Acute Renal Failure/ Rhabdomyolysis	24	26.37
7	Respiratory Failure/ Complications	33	36.26
8	Hospital Acquired Infections	32	35.16
9	Dysautonomia	53	58.24
10	Sudden Cardiac Arrest/ Death	25	27.47
11	Tachycardia	37	40.66

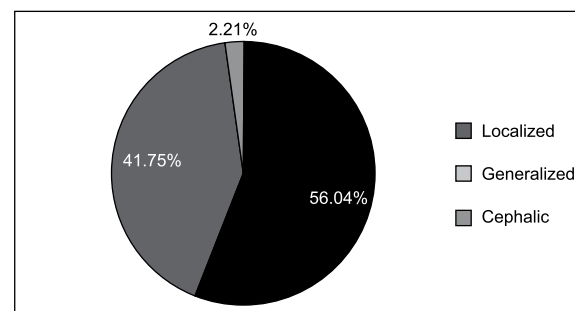


Figure 1: Graph showing Type of Tetanus Patients admitted in LRH Peshawar

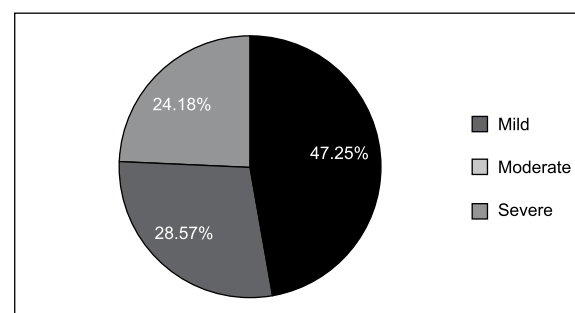


Figure 2: Graph showing Severity of Tetanus Patients admitted in LRH Peshawar

DISCUSSION

From the study results it was evident that prevalence of tetanus were more among old age patients as were previously assessed in various studies^{11,12}. Moreover in our study the mortality was high among the old patients as compared to the young patients and was supported by international studies⁶. In our study, 40.66% (n=37) has tachycardia which had lower prevalence while in an Indian study ECG showed 85% in tetanus patients¹³; and were confirmed by another study which had 82.75%¹⁴.

In our study, there were cardiac arrest, sepsis/septic shock, respiratory infections, pulmonary embolism, and tachycardia and were supported & confirmed in international studies^{5,6,15,16,17,18}. In an international study, acute renal failure was reported as a progressive illness, characterized by nuchal rigidity, limb spasm, grunting vocalization and risus sardonicus^{5,19}; and as were confirmed in our study which showed 26.37% (n=24) prevalence among tetanus patients.

In a study published in Canadian journal of anesthesiology, which showed respiratory failure and cardio-vascular collapse associated with autonomic instability¹², as were found in our study. Our study results showed that 27.47% (n=25) of tetanus patients died of sudden cardiac arrest/ death; as was reported in a Nigerian study of 2009⁶; which showed 26% to 60% mortality and thus support our study findings.

In our study 20.88% (n=19) had laryngospasm and 30.77% (n=28) had aspiration pneumonia, while in relevant studies it showed the same complications in tetanus patients^{6,9}. Moreover in our study; interestingly there were 2.20% cases of fracture/ break in the bone; 27.47% of disability; 35.16% of hospital acquired infections; and 58.24% of dysautonomias among tetanus patients as were revealed in different national and international studies^{5,10,12,15,18,20}.

CONCLUSION

Tetanus remains a major public health problem and is commonly associated with high morbidity and mortality. From our study results we conclude that most of tetanus patients were older than 30 years and had high rate of complications. Thus health education and tetanus immunization should be promoted to reduce the unacceptable prevalence of tetanus. Moreover, prophylactic use of antibiotics and treating tetanus patients in a highly established and well equipped Intensive Care Unit is needed to manage and prevent complications to reduce unnecessary morbidity and mortality.

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