TETANUS OUTCOMES IN ATERTIARY CARE HOSPITAL IN KARACHI.

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ABSTRACT

INTRODUCTION: Tetanus is a serious disease caused by a bacterial toxin that affects your nervous system, leading to painful muscle contractions, particularly of your jaw and neck muscles. Tetanus can interfere with your ability to breathe and can threaten your life. Tetanus is commonly known as "lockjaw. **OBJECTIVE:** "Our aim is to evaluate the frequency of different grades of tetanus and their outcome in patients of tetanus presenting to a tertiary care hospital in Karachi. **METHODS:** This is a descriptive observational study, conducted in Jinnah Medical College Hospital, Karachi. Duration of study was from 1st Jan, 2018 to 31st Dec, 2018. Patients with altered level of consciousness were excluded. Data was collected on predesigned Performa. Age was recorded as mean. Grading of tetanus was done according to clinical features using Ablett classification. Risk factors were stratified. **RESULT:** 48 (42 were male and 6 were female) patients were enrolled in the study during 1 year duration. The mean age of patients was 35 years. 35% patients were belonging to grade 4, 20.8 % grade 3, 33% grade 2 and only 10% belong to grade 1. The most common risk factor was trauma found in 22 (45.8%) patients while 13 (27%) patients had no risk factor for developing tetanus. 47.9% patients developed tetanus despite vaccinated while 25% patients did not know their immunization status. Overall mortality was 31% seen with grade 4. **CONCLUSION:** We should start proper awareness programs about its vaccination especially in emergency set up of every hospitals to overcome mortality and morbidity associated with it.

KEY WORDS: Tetanus Anti Toxin; Paralysis; Assessment Outcome; Risk.

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INTRODUCTION

Tetanus is a lethal but preventable bacterial infection. It is a worldwide infection although the incidence in developed countries significantly reduced but still about one million cases of tetanus occur worldwide every year, especially underdeveloped countries. Despite advancement in management and proper ICU care mortality is also very high (nearly 50%) in these developing countries. Tetanospasmin, a toxin produced by clostridium tetani causing Tetanus. This neurotoxin via peripheral nerves reach to CNS by retrograde axonal transport where it cleave Synaptobrevin and prevents pre-synaptic release of GABA (inhibitory neurotransmitter), causing sustained excitatory discharge of disinherited alpha motor neuron causing muscles stiffness and spasm. Incubation period of tetanus is highly variable range from one day to several weeks. Early the onset associated with more severe disease. The Patients usually presented with trismus, abdominal rigidity, opisthotonus, spontaneous spasm and autonomic dysfunction with cardiovascular instability in severe cases. Patient remains conscious throughout disease process a characteristics feature of tetanus. There are different ways by which bacteria get access to human body like wound, burns, intramuscular or intravenous injection, surgical procedure and insect bite .Spore germinate under anaerobic condition and produced tetanospasmin. Ablett classification is used to classify the severity of disease according to presence of certain clinical feature [1]. Effective vaccine is indicated in every case [2-3]. Patients usually present with grade 4 with a high mortality outcome [4]. The commonest risk factors for acquiring tetanus is Trauma following a road traffic accident followed by ineffective immunization, simultaneous infection with other pathogen, crushing or burns injuries and hiking in bat caves too. The patients with immunocompromised status are mostly susceptible to infection [5].

METHOD:

This was a Descriptive cross sectional study, conducted in Jinnah Medical College Hospital, Karachi from 1st Jan, 2018 to 31st December, 2018. A total of 48 patients of tetanus were included in this study. Diagnosis of tetanus was clinical, done by consultant neurologists, no antibody testing done. All patients of either gender above the age of 14 year with diagnosis of Tetanus were included in this study. Patients below 14 years, with altered level of consciousness or doubtful

diagnosis were excluded. In doubtful cases toxicology screening of urine and serum was done to rule out strychnine poising which is a true mimicker of tetanus clinically. Patients were classified into different grades of tetanus using Ablett classification by expert neurologist on first day of admission. This classification considered the following clinical parameters: grade I, trismus + dysphagia + generalized rigidity (present in more than one segment - head, trunk, arms and legs - of the body), with no spasms; grade II, mild and occasional spasms (generally after a stimulus); grade III, severe and recurrent spasms, usually triggered by minor stimuli (light, sound, measurement of vital signs, light touch, opening the eyes) or imperceptible stimuli; grade IV, same features as grade III + syndrome of sympathetic nervous system hyperactivity [1] . The questionnaire also included risk factors and immunization status.Informed consent was taken from attendants. Data was collected on a pre-design Performa. Baseline workup was done to exclude other causes of same presentation. Data was analyzed on SPSS version 17.

RESULT:

During study period total 48 patients with tetanus presented. Out of 48 cases, 42 (87.5%) were male and 6 (12.5%) were female with male to female sex ratio3.5:1.5. Mean age of patients was 35 years with age range of 16 to 65 year. Majority of patients belong to age group of 21 to 40 years. Among them 39% patients belong to urban areas and 61% were from rural areas. The mean incubation period was 10 days. Those patients who didn't know risk factor, incubation periods were not included. The maximum duration of hospital stay was 21 +/- 7 days while minimum duration was 1 week. Demographics are shown in table 1. Majority of patients were belonging to grade 4 (35.4%) and grade 2 (33.3%) while only 10.4% belong to grade 1. Grade 3 was only 20.8% shown in table 2. The most common risk factor was trauma found in 22 (45.8%) patients while 13 (27%) patients had no risk factor for developing tetanus. 47.9% patients developed tetanus despite vaccinated while 25% patients did not know their immunization status. Majority of our patients treated pharmacologically (standard protocol with Metronidazole, diazepam, tetanus immunoglobulin and in few patients we use MgSo4 for spasm control and only 10 patients underwent mechanical ventilation). Overall mortality was 31.25% with highest mortality seen with grade 4 (71%) and grade 3 (20%), grade 2 (6%) and all patients with grade 1 were discharged shown in table 3.

TABLE 1: DEMOGRAPHIC PROFILE

MEAN AGE	35YRS
MALE	42(87.5%)
FEMALE	6(12.5%)
URBAN	39%
RURAL	61%
MAX HOSPITAL STAY	21±7 DAYS
MIN HOSPITAL STAY	7 DAYS

TABLE 2: GRADING OF TETANUS

GRADES	FREQUENCY
1	5(10.4%)
2	16(33.3%)
3	10(20.8%)
4	17(35.4%)

Table 3: OUTCOME

OUTCOME	FREQUENCY
EXPIRED	15(31.3%)
DISCHARGED	33(68.75%)

DISCUSSION:

Despite availability of vaccine Tetanus is still a major health problem in Pakistan associated with high mortality. The incidence of tetanus in our country is under reported. It is important to know as a physician that tetanus vaccine does not provide protection throughout life, booster dose required after every10 year. The effectiveness of tetanus toxoid-containing vaccines is very high, although not 100% [2–3].In our study we enrolled 48 patients during one year period with 87.5% were male and 12.5% were female. Predominate male gender involvement may be because they involved more in outdoor activities in our country and have more chance to have injuries, another reason is improper vaccination after having injuries and also improper wound care. Not only this we also observed that young patients less than 40 years are common to have tetanus. Same pattern of disease observed in a study conducted in Pakistan published in 2016 [4]. Lau LG et al in Malaysia also showed same result [5]. We also observed that majority of our patients 61% belong to rural areas. These group of patients are usually farmer, had more chance to have a contact with soil and Clostridium tetani is ubiquitous in soil. Other important thing again is poor health infrastructure in these areas where proper

vaccination will not do. 25% patients not know their immunization status. There was a study conducted in Nawabshah showed 72% patients were not aware of their immunization [6]. Study in Ethopia also showed poor vaccination status among adults [7]. We also observed that 27% patients were not having history of exposure to any risk factor developed tetanus. Out of 27%, 62% not know their immunization status while 38% developed tetanus despite immunization.

In our study we found that 10% patients belong to grade 1, 33% patients were belong to grade 2 and 20.8% patients belong to grade 3 and 35% from grade 4. So Grade 4 is common in our study group. Talpur et al observed grade 1 is common is common in their study group, their 48% patients were belong to grade 1, 29% in grade 2, 19% grade 3 and only 3.8 from grade 4 [4]. These large difference from our study is most likely because most our patient referral from rural, came to us in sever condition. A study conducted in Nigeria also showed grade 3 is common in their population that was 60%.[8]

Another disappointing thing which we observed in our study is 47.9% patients developed tetanus despite proper vaccination which also showed improper vaccination schedule and lack of booster dose in our country. Practicing general physician does not have proper knowledge about vaccination schedule. There was a survey conducting in Pakistan which showed that only 2% practitioners were practicing the post exposure immunization correctly [9]. A study from Tanzania was also showed Icu stay of 19 days with range of 1 to 26 days [10]. Mortality from tetanus is variable range from 10 to 50% in adult depend on severity of disease and availabilities of health care facilities [11]. Another study Included 54 participant showed only 40.6% was properly vaccinated. The most common risk factor in our study was trauma which similar to other studies conducted in different countries. The mean incubation period was less than 10 days which also similar to other studies [5,6,7,8]. A study in Karachi done in 2004 showed various risk factors linked with neonatal tetanus in which home delivery had significant association [12].We also observed that grade 1 patients had minimum stay discharged within a week while patients of grade 3 and 4 had longest stay that is more that 21 days. A study in China in 2000 showed that 77% cases came from rural areas [13]. According to the Centers for Disease Control [14], 95% of affected patients have not completed p'imary immunisation, while the rest will have received no immunisation. In our study mortality was 31% which is quite consistence with another study conducted in Pakistan that showed mortality 25% [4]. Highest mortality was observed in grade 4 patients despite proper ICU care. In a Chinese study, Pneumonia was the main complication of tetanus-infected patients and was diagnosed based on clinical symptoms and chest computed tomography (CT) [15,16]. Majority of these patients need mechanical ventilation but we have limited resource not able to provide mechanical ventilation to all. According to CDC guidelines updated recently, they emphasize on the fact that vaccination gives significant immunity towards tetanus and must be implemented to combat a fatal disease [17,18]. A lot of work has been done in China about neonatal and maternal tetanus, they validated that they have eliminated tetanus from China[19,20,21]. Pediatric complications and kidney injury secondary to tetanus and pneumonias are devastating complications [22,23]. There is not much gender difference just that it's a disease of exposure so males are affected more [24,25].

CONCLUSION:

Tetanus is a devastating disease that can be prevented by proper immunization and wound care. We should start proper awareness programs about its vaccination especially in emergency set up of every hospital especially in rural areas from where majority of our patients belong.

ETHICS APPROVAL: The ERC gave ethical review approval **CONSENT TO PARTICIPATE:** written and verbal consent was taken from subjects and next of kin

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