ORIGINAL ARTICLE

TETANUS: Presentation and Outcome in Adults at Tertiary Care Hospital

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ABSTRACT

Objective: To determine the presentation, management and mortality rate of tetanus patients at Tertiary Care Hospital.

Methods: This cross sectional study was conducted at Surgical Department of PMCH Nawabshah from August 2016 to July 2017. A total of 30 patients diagnosed as tetanus were admitted from the surgical outdoor patient (surgical OPD) and emergency department of PMCH Nawabshah. All required investigations were done. All the patients were treated accordingly. Results were statistically analyzed.

Results: Out of total 30 patients, 20 (66.6%) were males with gender ratio of 2:1 male to females respectively. Age was between 15 -80 years with average age of 45 years. Commonest presentation was lock jaw, observed in 93.3% of cases followed by 83.3% cases of neck rigidity, 76.6% cases of Seizures, 50% cases of Hyperthemia and 50% cases of Abdominal Rigidity. 10 (33.3%) patients recovered and discharged while 20 (66.6%) patients expired.

Conclusion: Males are more affected. The mortality rate in tetanus patients was 66.6% in our setup.

Key Words: Tetanus, Open Wound, Clostridium Tetani, Lock Jaw, Neck Rigidity.

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INTRODUCTION:

Tetanus is a serious, fatal and a life threatening bacterial infection. This disease is also known as "lockjaw". It is caused by bacterium called Clostridium Tetani related to clostridium species. This micro organism influences the brain and nervous system by producing a toxin resulting in muscle stiffness. Pathophysiology of the disease entails that the spores of clostridium tetani are accumulated in wound which adversely affects the nerves whose vital function is to control the muscles. The bacterium resides in soil, manure and the different environmental agents. The individuals can be infected by these bacteria if they have got wound with contaminated object harboring the clostridium tetani[1].

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In developed Countries like United Kingdom, 1 in 10 patients die due to tetanus despite the fact that these counties have the best intensive care services in the world. The death ratio found in developing/underdeveloped countries is 9 in 10. Studies show that neonatal tetanus has appeared to be leading cause of death in Asian and African countries. The cause is the infection of the baby's umbilical stump. This is the reason that World Health Organization (WHO) is endeavoring to root out the neonatal tetanus throughout world and there is positive result in this regard.[2]

The invention of vaccine for tetanus patients in 1961 dramatically brought about revolutionary changes in mortality rate of tetanus patients in a year and by 1970s seldom was the case of tetanus found in United Kingdom. Nowadays hardly is a case of tetanus recorded

only in unvaccinated old aged or usage of contaminated injected drugs. Though the numbers of cases are reported very low, the mortality is still seen in their society due to this disease. 20 patients have expired due to tetanus in U.K in last 2 decades.[3]

European Union reported 84 cases of tetanus in 26 countries only in 2014. Old age people were the common victims of this disease usually in their sixth and seventh decade of their life (0.08 cases per 100000 populations). This ratio accounts for 74% of all cases affected. Male to female ratio was 0.6:1. 81% cases were females.[4]

Tetanus is classified into four types with minor variations in their presentations. First is the generalized tetanus involving 80% of all cases. The descending pattern of symptoms and signs occur in these type of patients. First sign is trismus/ lockjaw and a facial spasm known as risus sardonicus. Second sign is stiffness of neck muscles with difficulty in swallowing followed by the involvement of pectoral muscles. Hotter temperature with sweating, high blood pressure and irregular heart beat are the other clinical features in generalized tetanus. The progression of the disease results in spasm in awkward positions called opisthotonos. Second one is the neonatal tetanus resulting from infected umbilical stump. Hardly is it found in developed countries whereas in other global regions 15% neonatal deaths are only due to this disease. Third and least dangerous type of tetanus is local tetanus involving the local area of the body and accounts for only 1% risk of deaths. Cepahalic tetanus is the fourth and rare type of this disease starting from the ear infections harboring the clostridium tetani affecting the cranial and facial nerves.[5,6]

Till today the tetanus is diagnosed clinically but it can also mimic conditions like drug induced dystonia, malignant neuroleptic syndrome or strychnine poisoning. Serum tetanus toxin or the detection of Clostridium Tetani by PCR of a wound swab can assist in the diagnosis.[7]

Total 5 doses of vaccines are given to children. Three doses are given by Penta vaccine (containing 5 vaccines in 1 Vial), then fourth in pre-school booster and last is teenage booster.

Tetanus booster is indicated only to those having the history of trauma/wound or has not been vaccinated in childhood.[8]

The unvaccinated persons are more vulnerable to develop Tetanus. The complications due to tetanus are bone fractures, aspiration pneumonia, laryngospasm, titanic seizures, pulmonary spasm and acute renal failure.[9]

The treatment of tetanus is started with tetanus Immunoglobulin (TIG). It can safely be given in pregnant and breastfeeding mothers. Pencillin/Metronidazole are also given. Those patients having hypersensitivity to Pencillin / Metronidazole, tetracycline is indicated.[16] Anticonvulsants such as Diazepam (Valium), muscle relaxants like baclofen and neuromuscular blocking agents like pancuronium / vancuronium are prescribed. Surgical option commonly utilized is surgical debridement of necrotic tissues at wound site. Tracheostomy is done in emergency in some cases and patients can also be put on ventilator if needed. Nutrition of high calories is used in these patients.[10]

The rationale of our study is to detect the mode of presentation, management options and mortality rate of patients suffering from tetanus at tertiary care so that awareness programs should be started in our area to lessen the incidence and mortality rate in tetanus patients.

METHODS:-

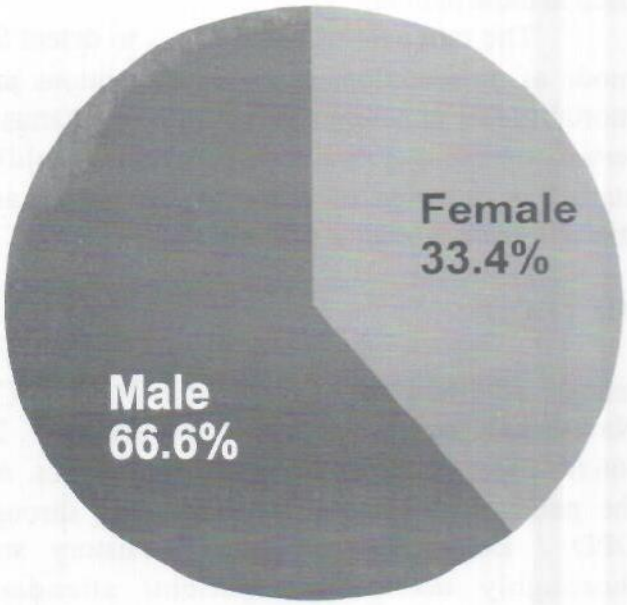
This study included total 30 patients of tetanus admitted at Surgical Unit 2 of PMCH Nawabshah from August 2016 to July 2017. 20 (66.6%) were male and 10 (33.3%) females. All the patients of Tetanus were admitted through OPD / Emergency department. History was thoroughly taken from patient/ attendant. Common symptoms were lock jaw, neck rigidity, seizures, hyperthermia and abdominal rigidity. History of trauma was also taken. General Physical Examination was done. Examination of neck, mouth, ear, chest, and abdomen was done. Wound was also examined and decided either surgical debridement is needed.

Patients were diagnosed clinically. Routine investigations with viral profile were

done. Conservative treatment was started. Intravenous fluids were given. Tetanus immunoglobulin was immediately given. Antibiotics like Pencillin / Metronidazole were given and replaced with tetracycline if patient had hypersensitivity to Pencillin. Anticonvulsant diazepam and muscle relaxant baclofen was used to control seizures and irritability of patients. Surgical debridement of infected wound was done in 3 patients. Help was sought from ENT department for performing in tracheostomy in these patients when needed. High calorie parenteral nutrition was given.

RESULTS:

Out of total 30, 20 (66.6%) patients were male and 10 (33.4%) were females with both genders ratio of 2:1 shown in figure below. Patients aged from 15 to 80 years. Average age was 45 years. All patients had previous history of wound at foot, hand and neck.



Graph I: Gender

Commonest presentation was lock jaw in 28 (93.3%). Next common symptom was neck rigidity in 25 (83.3%). Seizures were noted in 23 (76.6%) patients. 15(50%) patients also came with complain of hyperthermia and abdominal rigidity was observed in 15 (50%) patients (Table No I).

Table I. Clinical Presentation (n=30)

No.	Clinical Presentation	Frequency	Percentage
1	Lockjaw/Trismus	28	93.3%
2	Neck Rigidity	25	83.3%
3	Seizures	23	76.6%
4	Hyperthermia	15	50%
5	Abdominal Rigidity	15	50%

The duration of hospital stay of tetanus patients was different among 10 patients who survived. 5 patients responded within 28 days, 3 stayed for 15 days and 2 patients stayed in hospital for 5 days as is shown below (Table No. II)

Table II. Duration of Hospital Stay

No.	No. of Patients	Duration of Stay in days
1	5	28
2	3	15
3	2	5

DISCUSSION:

Though the disease is preventable in developed countries, it still has higher mortality rate in developing and underdeveloped countries.[11] Likewise, our study also shows high mortality rate of 66.6%. Another study showed higher mortality among old age patients but in our study mortality was higher among middle aged patients. Male female ratio in European study is 0.6 (60%):1 (81%) respectively[12] whereas in our study M: F ratio is 2(66%):1(33%) respectively. Males are commonly affected in our setup.

According to study conducted in Japan, the incidence of tetanus is common in young population as is seen in our study. In Japan, 94% patients were more or less than 40 years whereas only 18% were more or less than 80 years age.[12] In this study, average age was 45 years. Farmers were commonly infected by this disease in our study. Next affected group of people were belonged to factory workers or persons coming into contact with sharp objects and living in unhygienic conditions. In our study, It was found that the disease caused even patients had abrasion. A study was reported in United States of

2 cases of very old age patients more than 90 years age.[13] In our study, age range was under 80 years. They needed prolonged mechanical ventilation (PMV) for more than three weeks. In our study, only two patients below 80 years needed PMV but only for 5 to 7 days. In one study, dog bite was presented as the predisposing factor[14] but in our study, none of the case was having history of any bite of animals.

CONCLUSION:

Males are affected more as compared to females. The mortality rate in tetanus patients is still higher in our setting depending on the severity of the disease.

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