ORIGINAL RESEARCH

A Retrospective Study, to Find Out Incidence, Mortality, Causes and Vaccination Status in Cases of Tetanus, among all Pediatric Admissions in Tertiary Health Care Centre, During 1st January 2014 to 31st December 2014

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ABSTRACT

Introduction: Tetanus is a life threatening but preventable disease. In spite of national vaccination program against it, tetanus occurs frequently in developing countries like India.
The present study was aimed to find out incidence, mortality, vaccination status and causes of cases of tetanus, among all pediatric admissions in tertiary health care centre during 1st January 2014 to 31st December 2014.
Materials and method: Medical case record sheets of all cases of tetanus admitted under pediatrics, during above mentioned period, were studied in detail. Data obtained was tabulated and analyzed statistically. Care is taken that the identity of patients is not revealed.
Results: Incidence of tetanus was found to be 3.299 per 1000 pediatric admissions. Out of these 42.86% were females and 57.14% were male. None of them were completely immunized. Middle ear infections and injuries were common routes for entry of organism. Mortality rate was found to be 35.71%, even after proper treatment and supportive care.
Conclusion: 'Complete immunization' for tetanus was lacking in all cases of tetanus. So we can conclude that efforts to have 100% population immunized completely can reduce the incidence of tetanus, which has high mortality even after proper treatment.

Keywords: Incidence, mortality, tetanus

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INTRODUCTION

Tetanus is a life threatening but preventable disease, not seen commonly in developed world but occurs frequently in developing countries.[1,2] It is caused by bacterium *Clostridium tetani*, a spore forming anaerobic gram positive motile bacillus. It produces two toxins tetanolysin and tetanospasmin. Tetanolysin potentiates the infection and tetanospasmin is responsible for manifestations of disease.[3]
Diagnosis of tetanus is mainly clinical as there is no diagnostic laboratory test available. *C. tetani* is recovered from wounds in only about 30% of cases of tetanus.[4] Tetanus mainly occurs in unimmunized or partially immunized persons. Neonatal, localized and generalized tetanus are three forms of presentation out of which localized tetanus is uncommon.
Our country has adopted expanded program of immunization since 1978. Since then DPT i.e. Diphtheria, Pertussis and Tetanus vaccine is being given at 6, 10, 14 weeks and booster at 18 months. Boosters of tetanus vaccine are also given at 5 years, 10 years and 16 years. To prevent neonatal tetanus, irrespective of this immunization, two doses of tetanus toxoid are given one month apart to primi mothers. In second pregnancy single dose is sufficient, if second pregnancy is within 5 years of 1st pregnancy.[5]
In spite of this vaccination schedule included in national programs, many cases of tetanus are seen in pediatrics. Cause may be incomplete vaccination. In this study we triedto find out incidence, mortality and vaccination status of tetanus cases.

MATERIAL AND METHOD

Medical case record sheets of all cases of tetanus admitted under pediatrics at the tertiary health care centre, during 1st January 2014 to 31st December 2014 were studied in detail. Care was taken that identity of patient do not get revealed at any time during study or in publication.
Incidence of tetanus among all pediatric admissions during this period is calculated.
Treatment given was studied and mortality of tetanus among

those who have received complete treatment, including supportive care in dark and quiet room, human tetanus immunoglobulin, benzodiazepines like diazepam and antibiotics like crystalline penicillin or metronidazole, calculated.

STATISTICAL ANALYSIS

Data collected wass tabulated and analyzed statistically using MS-Office Excel to find out incidence and mortality of tetanus.

RESULTS

As shown in table no. 1 during the period of 1 year (1st January 2014 to 31st December 2014), total 14 cases of tetanus were admitted under pediatric department. Out of which only one was a case of neonatal tetanus while remaining 13 were cases of generalized tetanus. So incidence of tetanus among all pediatric admission is 3.299 per thousand pediatric admissions (table-1).

As seen in table-2 incidence is higher in males as compared to female patients.

None of the tetanus patients were completely immunized with tetanus toxoid (table-3).

Middle ear infection and wounds were equally responsible important routes of entry.

Trismus and hypertonia were seen in all the patients. Spasms were seen in 92.86% of patients.Opisthotonus and fever was present in 64.29% of patients (table-5). Out of 14 patients admitted, 5 patients died, thus the mortality rate being 35.71% (table- 6).

Total admissions under pediatrics	cases of tetanus	Incidence
4244	14	3.299

Table-1: Total cases of tetanus under pediatrics

Female	Male
6 (42.86%)	8 (57.14%)

Table-2: Distribution by sex

Immunization status	No. of patients
unimmunized (patient or mother, in case of neonatal tetanus)	10 (71.43%)
partially immunized	3 (21.43%)
not known	1 (7.14%)
Total	14

Table-3: Immunization status

Route of entry of organism	No of patients
ear(otogenic)	5(35.71%)
wound	5(35.71%)
not known	3(21.43%)
Umbilical stump	1(7.14%)
Total	14

Table-4: Route of entry of organism

Symptoms	Present	Absent
fever	9(64.29%)	5(35.71%)
trismus	14(100%)	0(0%)
hypertonia	14(100%)	0(0%)
opisthotonus	9(64.29%)	5(35.71%)
spasms	13(92.86%)	1(7.14%)

Table-5: Symptoms

Outcome	No of patients
cured	9(64.29%)
died	5(35.71%)
Total	14

Table-6: Outcome

DISCUSSION

The present study showed incidence of tetanus among all pediatric admissions to be 3.299 per 1000 pediatric admissions; with 42.86% females and 57.4% males. In Indian scenario male child is more likely to go and play outdoor than female child; hence there are more chances that boys will get infected wounds. Previous studies conducted on adult population also showed males preponderance as compared to females.[6,7]

None of the patients were known to be completely immunized. 71.43% patients were totally unimmunized, while 21.43% patients were partially immunized. In one patient immunization status was not known to relatives. This suggests that lack of complete immunization is the major cause of development of tetanus. Complete immunization includes 3 doses 1 month apart at 6, 10 and 14 weeks and then boosters at 18 months of age. Next boosters are at 5, 10 and 16 years. This will insure a protective titer for tetanus immunoglobulins that is >0.01IU/ml.[8] Boosters are important as immunity wanes over 6 to 12 years after vaccination.[8] In developing countries like India though government have included tetanus vaccine in national program, there is lack of complete immunization, boosters are often ignored. The area in which this study was conducted has low literacy rate and patient coming to this institute are from adiwasi, hilly areas, where the immunization coverage is poor due to remoteness of the area.

Umbilical stump is the route of entry of organism in case of neonatal tetanus, due to unhygienic conditions and lack of aseptic precaution in home delivery. Among others trauma causing infected wound (35.71%) and infected ear (35.71%) are equally important routes for entry of *clostridium tetani*, as it can't traverse intact skin.

Trismus and hypertonia were present in all the patients. This finding is similar to the findings of study conducted in adult population where trismus and hypertonia were common presenting features.[6] Spasms were seen in 13 of 14 patients. Spasms appear with increasing severity of disease, reflecting

sustained tonic contractions of muscles. In very severe cases spasms occur even without stimulus. Presence of spasms in 92.86%, suggest that almost all the patients presented in sever stage of disease when spasms were already started. Opisthotonus and fever was present in 64.29% patients.
35.71% patients died even after they were given ventilatory support along with human immunoglobulins, benzodiazepins like diazepam, largactil, and antibiotic crystaline penicillin, supportive care in dark and quiet room.

CONCLUSION

Tetanus has very high mortality rate, even after proper treatment. And it occurs in those who are not completely immunized. So it is better to prevent this disease through complete immunization including booster doses and immunization of pregnant ladies.

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