

# IDENTIFICATION OF PATHOGENIC & PROGNOSTIC HIGH RISK FACTORS IN TETANUS; ONE YEAR EXPERIENCE

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## ABSTRACT

**Objectives:** To pick up high risk determinants and factors influencing the outcome of the management in tetanus. **Study Design:** A prospective analytical case series study. Setting: Tetanus ward, DHQ Hospital, Punjab Medical College Faisalabad. **Subjects & Method:** All cases during one year (Jan 2000 to 31 Dec 2000) presenting through emergency ward and referred cases were admitted and treated in tetanus ward. The cases included in study were above 5 years of age. **Results:** Sixty cases (41 male and 19 females) were studied during one year. Thirty cases were described as high risk. The classical symptoms; trismus, dysphagia and muscular spasm were present in all cases. Twelve risk factors were high lighted in one year. Household injuries leading to septic wounds in males and illegal septic abortions were concluded as the highest risk factors. Injuries inflicted after road traffic accidents in males presented with shortest incubation period and were declared as higher risk factors, with 67% mortality. Eleven ladies with septic abortion were admitted and six out of them expired (mortality rate 55%). Eleven patients presenting with no known injuries, five of them expired. The overall case fatality rate during one year was 40%. **Conclusion:** We picked up twelve high risk factors during one year study and found that house hold injuries caused maximum mortality (75%) in females and road traffic accident was fatal in males (67%) mortality. It was found that all the cases were non immunized. The basis of prevention is immunization. Health education is required in our society to follow the immunization programme. The cost-effective approach is required in our country to lessen the financial burden and reduce the hospital stay.

## INTRODUCTION

Tetanus is known as a disease sometimes with fatal outcome since the times of Hippocrates Circa (460-377 BC)<sup>1</sup>. It is an acute toxemia with a high fatality rate resulting from clostridium tetani infections at a breach in the skin that may be trivial or unrecognized. Since clostridium tetani organisms are disseminated far and wide in soil and animal feces, agriculture workers suffer a high incidence of infections than others<sup>2</sup>. Tetanus is the problem of third world today. It is pitiable that in our slowly developing country, we are planning a study to pick up high risk determinants of tetanus when people in free world are talking near complete control of the dreadful disease of tetanus, only fifty cases a year in

USA<sup>3</sup>.

The fact is that in our tetanus ward 3-4 cases of tetanus are all the time present. The average stay of the patients is about 4 weeks, a burden on the isolation ward, high dependency unit and family. Going through the text books and scanty literature, in this subject we don't get much information regarding the wound characteristic with high potential to get the disease nor we are very clear about the factors affecting the outcome. The risk factors are different in developing countries like Pakistan and in developed countries. In UK, people with trivial injuries causing breach in the skin suffer with tetanus and we received more cases of males in our unit due to agricultural injuries.

## SUBJECTS & METHODS

A study performa was designed to collect all the information showing the risk factors, incubation period, mode of onset. A criteria was laid out for tetanus prone wounds, depicting shape of the wound, depth of the wound (more than 1cm), contamination (soil, feces, crust) and characteristics of the wound whether devitalized or enervated. One team worked in accordance with the latest text book recommendation and proper record maintained in the study performa.

## RESULTS

Twelve high risk factors were identified during one year study in sixty patients. Forty one males and nineteen females presented with the illness (male to female ratio was 2.2:1). Case fatality rate was 40%.

Risk factor	Male	Female	Expiry (%)
Household Inj	4	1	75
RTA	6	0	67
Abortion	0	11	55
Agri Inj	10	1	20
Thorn Prick	3	0	34
Abscesses	3	1	0
Penetrating Inj	3	0	34
Burn	2	1	50
Surgery		0	0
Ulcer	1	0	0
Ear Piercing	0	1	0
Unknown Inj	8	3	55

Shortest incubation period was associated with fatal outcome (well marked in road accidents injuries). Six male patients came with RTA injuries with average incubation period of 48 hours, four out of them expired

(66%). Five patients (4 male and 1 female) presented with tetanus prone wound due to household injury, four males out of them expired (mortality rate 75%). Eleven ladies presented with illegal (septic) abortions, six expired (mortality rate was 55%). Expiry rate was more in males than females. The best prognosis was noted in local tetanus (two cases who were discharged safely). No anaphylactic reaction after ATS injection was noted during one year. No sensitivity reaction to penicillin was recorded during one year.

## DISCUSSION

All the risk factors are influenced by the standard of living and customs of the society. In developed countries, the senior people greater than or equal to sixty years continue to be the highest risk factors, due to low immunity to tetanus in the population. Drug poppers particularly heroine users have been reported high risk for tetanus both in US and elsewhere<sup>4</sup>.

The high risk among drug users is related to both increased exposure and susceptibility including the high prevalence abscesses, which favour anaerobic condition for bacterial growth, secondary to non-sterile injections<sup>5</sup>, contaminated drug supply<sup>6</sup> and low immunity.

Three of twelve cases among persons aged less than twenty five years were among children who received no vaccine because their parents had a religious or philosophic objections to vaccinations<sup>7</sup>. The condition differ in our set-up where most of the population is non-immunized or incompletely immunized. This comparison is more significant in children because youngsters are almost immune due to EPI progamme.

Tetanus is self-limiting disease and carries high mortality in Pakistan<sup>8</sup>. In our study, male to female ratio is 2.2:1 and 1.6:1 in NWFP. We received sixty cases in one year showing high incidence of tetanus in one area as compared to hundred cases which were studied during four years in a teaching hospital in NWFP<sup>9</sup>. Agricultural injuries were the leading cause of tetanus in our studies as we received eleven such cases (10 males and 1 female), whereas road traffic injuries were the leading presentations in males in a study by Talat Naheed and Samina Khan<sup>10</sup>.

We received septic abortions as highest risk factors in ladies which is supported by literature, V.R. Tindall<sup>11</sup> suggests that apart from introducing infection due to use of domestic or dirty instruments, it can even cause trauma to vagina, cervix and urethra and may be the source of growth of spores of C1. Tetani. Tetanus is predominantly a disease of underdeveloped society found in a warm, damp climate<sup>12</sup>. Local tetanus showed the best prognosis, we received two cases and discharged them safely. The use of ATS shows better results as compared to Tetanus immunoglobulin (TIG) in accordance with a study by Altaf Hussain Rathore & Riaz Hussain<sup>13</sup>. Developed nations have lower incidence of mortality in tetanus. The reason for lower mortality in developed nations is proper vaccination and early presentation, moreover, such cases are treated in high dependency units. In US, the mortality rate was 30%<sup>14</sup>. Mortality is reported to be higher in under developed countries like Uganda 68%<sup>15</sup>. The case fatality rate in our study was 40%.

## CONCLUSION

Tetanus is still a mystery in the nature, very little is known about the nature of the disease and causative agent. It is a fact that there is strong correlation between the late presentation and bad prognosis of the wound dressed by cow dung poultice. So far as illiteracy and quackery are with us tetanus will remain a problem. Prevention is better than cure is proper dictum applicable to tetanus. Immunization should be the gold standard in prevention. In adequately vaccinated persons should be given the booster doses of T.toxoid.

Health education is necessary in periphery to make people aware of tetanus. High dependency units are the need of today to cope with this fatal disease. A try was made to choose a cost effective therapy or a treatment which reduces the need of ICU and ventilatory support, for example, use of atropine sulphate infusion and magnesium sulphate infusion which are under trial in our unit and better results are expected.

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