

A retrospective review of tetanus experiences in a Sudanese tertiary care hospital.

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INTRODUCTION

The According to the World Health Organization (WHO), tetanus is an acute infection brought on by the neurotoxin-producing bacteria *Clostridium tetani* [1]. Animal excrement, dust, and dirt are all home to the obligate anaerobic bacillus *Clostridium tetani*, which is Grampositive and spore-forming. The WHO notes that the death rate has improved after vaccination, supporting the idea that tetanus is a preventable disease [2]. Tetanus remains a serious problem worldwide despite the immunization campaign, particularly in developing nations where the fatality rate ranges from 20 to 45% [2, 3]. Its high frequency can be attributed to inadequate wound care and low immunization awareness in poorer nations [4]. Developed nations have reduced tetanus incidence and fatality rates; this is because many hospitals in developing nations with low resources do not have intensive care units or early treatment available.

Tetanus infections typically happen after burns, wounds, surgeries, ulcers, or gangrene. There are additional records of dog and snake bites [3]. -The strong neurotoxin tetanospasmin, produced by e bacterium, is what causes the clinical signs and symptoms of tetanus. The most frequent presenting symptoms are dysphagia, lock jaw, generalized muscle spasms, and stiff neck. The diagnosis is based mostly on clinical manifestations; imaging or laboratory testing are not required to confirm the diagnosis [6]. Depending on the disease's severity, different treatments are used; still, early supportive measures, the use of antibiotics, and muscle.

Tetanus is still a serious health concern in Sudan, particularly in rural regions, where it is linked to a high rate of morbidity and mortality. -Data regarding the incidence and prognosis of adult tetanus in Sudan are lacking. -The purpose of this

study is to characterize the treatment outcome and pattern of presentation among adult tetanus patients in our community and to pinpoint the most frequent causes.

MATERIALS AND METHODS

Study Design

The research was a descriptive retrospective study conducted at a hospital.

Study Area

The Wad Medani Teaching Hospital in central Sudan served as the study's site. Serving the state of Gezira as well as the neighboring states, it is a tertiary hospital. The hospital accepted patients from the neighboring states as well as Gezira state, and it has an isolation area for tetanus victims.

Study Duration

The research was carried out from January 2018 to December 2020. Methods & Tools for Gathering Data. -e data were gathered via a questionnaire from the patient records. Age, gender, employment, etiology, incubation period, comorbidities, injury site, presenting symptoms, kinds of antibiotics and muscle relaxants used, use of mechanical ventilation, duration of hospital stay, complications, and outcome are all included in the questionnaire. Every research participant's prior immunization history was documented.

Data Analysis

Microsoft Excel and the Statistical Package for Social Sciences (SPSS 23.0) were used to analyze the data. To characterize the data's pattern, descriptive statistics were used. If the P value is less than 0.05, it will be deemed significant.

RESULTS

During the study period, 141 people contracted tetanus. 15 people, or 48.38 percent, were afflicted in 2020 (Figure 1). These had a male-to-female ratio of 2.875:1, with 23 (74.2%) males and 8 (25.8%) females.

They were between the ages of 20 and 70 (Figure 2). The patients' occupations are as follows: government servant (3.2%), housewife (22.6%), farmer (19.4%), free worker (48.4%), student (3.2%), and retired (3.2%) (Table 1). -ree patients declined to take part in the research.

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Out of the twenty-four patients (77.42%), only seven (22.58%) had received a previous tetanus vaccination. The remaining patients were either not vaccinated or were unaware of their status.

The most frequent portal of entry was acute injuries including laceration, puncture, or prick (64.51%), which was followed by snake bites (9.67%); local surgical procedures and scorpion stings each accounted for 3.22% of cases. -In 19.35% of cases, the portals of entrance were not determined. In 48.38% of the cases, the injury site was not specified, and the majority of cases involved the lower extremities. Comorbidities affected just 3 patients.

DISCUSSION

Sudan is among the underdeveloped nations where tetanus remains a serious health issue due to its high morbidity and fatality rate. Males were more affected than females in this study ($P < 0.05$); this finding is consistent with research from other developing countries.

Because they are more likely to work outside in fields like farming and other outdoor jobs, men are more prone to injuries. The decreased percentage of tetanus among females in our study may be explained by the vaccination of females during childbearing age. Tetanus vaccination health education is required in order to increase community awareness. - The study group's mean age was 44, suggesting that tetanus typically affects younger people. Our findings are also consistent with those of other research conducted in poor nations that produced comparable findings.

The patient's line of work is another significant risk factor. Research from China and Nigeria indicates that most tetanus-affected individuals are farmers [4, 15]. Workers, on the other hand, have an incidence of 48.4%, according to this survey, while farmers and civil servants have incidences of 19.4% and 3.2%, respectively.

Through puncture wounds, cuts, skin pricks, surgical procedures, or animal attacks, *C. tetani* enters the body. In 80.62% of the patients in our study, these contaminated wound types allow the germs to enter the body. This finding is in line with a Chinese study [4]. The study also showed that the lower limbs were the most frequently used entrance points. This helps to explain why *C. tetani* can enter the body through contaminated wounds on the lower limbs because the bacteria can be found in dirt and animal excrement. While our result differs from [12], it is comparable to other studies [6, 9, 16]. Diabetes-related vasculopathy and ulcerations may raise one's risk of developing the condition; however, only two of the patients in this study had diabetes. Furthermore, Rogers and Frykberg observed a correlation between tetanus infection and hypertension.

Unfortunately, our hospital did not have access to an intensive care unit that was equipped with skilled medical and nursing staff, which is necessary for the treatment of tetanus. Surgical debridement was performed on all individuals in the current study who had a discernible portal of entry in order to stop the toxin from developing further. When it came to antibiotics, metronidazole and Penicillin V were the most often utilized.

Metronidazole has been shown to decrease mortality and halt the progression of the disease, while Penicillin V increases the potency of tetanus toxin by blocking the gamma-aminobutyric acid type-A (GABAA) receptor [19, 20]. All patients received the benzodiazepine medication diazepam, which improves patient outcomes by lowering anxiety, relaxing muscles, producing drowsiness, and preventing cardiac problems [20].

The study's mortality rate, which was 48.4%, is generally in line with previous research findings [16]. The majority of the Respiratory issues and unexpected heart fatalities were blamed for the deaths. Less than 48% of deaths were documented in studies conducted in the US and Bangladesh [11, 16, 21]. The high death rate seen in this study is attributed to resource scarcity. The study's survival rate was 51.61%. One of them had irreversible impairments and needed amputation below the knee due to right foot infection that did not improve with medication. - Six days was the overall mean length of hospital stay, which is short of comparable research' findings.

CONCLUSION

Tetanus is still a disease with a significant morbidity and fatality rate in Sudan. Tetanus is an infectious disease that can be prevented by vaccination, thus getting vaccinated on a regular basis and receiving the right wound care are important. A catastrophic result is caused by research participants' incomplete immunization records, poor supervision, and a dearth of resources.

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