The Pattern and Outcome of Adult Tetanus at a Sub-urban Tertiary Hospital in Nigeria

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ABSTRACT

Though tetanus is a major cause of preventable morbidity and mortality in Nigeria, there is a paucity of data on the pattern and outcome of the disease among the sub-urban and rural populations. This retrospective study of adult tetanus at a sub-urban tertiary hospital in Nigeria reports a high case fatality rate of 57.1% in 35 patients with a mean age of 33.0±14.8 years. Severity of disease (p=0.02), presence of complications (p=0.001) and length of hospital stay (p < 0.001) were significantly associated with fatality. Preventive measures for control of tetanus should be extended to the inaccessible sub-urban and rural areas of Nigeria.

Key words: Adult. Tetanus. Case fatality rate. Nigeria.

Tetanus is a life threatening infection of the nervous system that is preventable by proper immunization. However, despite the documented effectiveness of tetanus vaccines and its availability since 1923, tetanus persists as a global problem because many inaccessible populations in both developing and developed societies have poor coverage.[1,2]

In Nigeria, available information on tetanus is based on reports from studies which were mostly done in teaching hospitals in urban centres.[1,3] Although these studies from the urban centres identified it as a problem of immense magnitude with a high case fatality rate, few studies have been done among the sub-urban and rural populations where specialists and adequate facilities for its treatment are not widely available. An earlier study at a sub-urban general hospital in Ogbomoso, Nigeria reported a pattern and outcome of tetanus that were similar to findings from the urban centres.[4] This present study was undertaken to describe the pattern and outcome of adult tetanus in a sub-urban tertiary hospital in Bida, Nigeria.

It was a retrospective review of the hospital records of all adult patients ($\geq$ 15 years) with tetanus, admitted and managed by the department of adult medicine of the Federal Medical Centre, Bida, Niger state in Nigeria, from January 2002 to December 2006. The diagnosis and grading of tetanus was made as described earlier.[5] Statistical analysis were done with version 13.0 of SPSS. The mean and percentages were determined while student t-test and chi square with Fisher 2 exact test were used to test the level of significance as indicated. P value < 0.05 was considered significant.

There were 41 tetanus patients out of 3,514 medical admissions over the period of the study giving an incidence of 11.7 per 1000 medical admissions. The records of 6 of them could not be retrieved leaving 35 (85.4%) patients for analysis. Their ages ranged from 15-80 years with a mean of 33.0±14.8 years. Thirty (85.7%) were males while the rest were females. The majority of them were of low socioeconomic status; fourteen (40.0%) farmers, 9 (25.7%) students and the rest were drivers, petty traders, junior civil servants and roadside mechanics.

The portal of entry was present in 24 (68.6%) patients; mostly, (20, 57.1%) on the lower limbs through deep prick/puncture. One case each was complicated snake bite, scorpion sting and uvulectomy by traditional healer. There was no case of tetanus due to puerperal sepsis. Rigidity (n=33; 94.3%) and generalized spasms (n=33; 94.3%) were the most common presenting features in them. Others include locked jaw (n=29; 82.9%), neck stiffness (n=26; 74.3%), opisthotonus (n=11; 31.4%) and fever (n=7; 20.0%). One (2.9%) of the patients had mild tetanus, 9 (25.7%) had moderate tetanus, 21 (60.0%) had severe tetanus and 4 (11.4%) had very severe tetanus. More than one-half (14, 56.0%) of severe and very severe tetanus cases were seen in the last two years of the study.

All the patients were given antitetanus serum (after a test dose), intravenous diazepam and antibiotics. Chlorpromazine was given in addition to diazepam in 19 (54.3%) patients. There was no significant difference between those who had diazepam alone and those who had chlorpromazine in addition to diazepam (x^2=0.33; p=0.56). None of the patients was managed in the intensive care unit or had mechanical ventilation.

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The overall case fatality rate (CFR) was 20/35 (57.1%). The CFR increased significantly (x^2=9.59; p=0.02) with severity of tetanus. The presence of complications also significantly (x^2=10.38; p=0.001) increased the CFR. Fifteen (83.3%) of the 18 patients with complications died, see detail in Table I. The case of tetanus following snakebite and scorpion sting died. Length of hospital stay was significantly shorter (t=5.194; p=0.000) in those that died (6.9±4.5 days) compared to those who survived (19.7±8.4 days). The mean duration of hospital stay was 12.3±9.0 days with a range of 3-34 days. The mean incubation period (t=0.56; p=0.58) and the mean period of onset (t=1.14; p=0.28) in those that died were not significantly different from those that survived. Fatality in males was not significantly different from that in females (x^2=1.09; p=0.24).

Table I: Case fatality according to grades of disease and presence of complications among tetanus cases managed at Federal Medical Centre, Bida.

Parameters	Total number	Fatality (%)
Grades		
I	1	0 (0.0)
II	9	2 (22.2)
III	21	14 (66.7)
IV	4	4 (100.0)
Complications		
Aspiration pneumonia	5	3 (60.0)
Autonomic disturbance	4	4 (100.0)
Respiratory failure	4	4 (100.0)
Sepsis	4	4 (100.0)
Vertebral fracture	1	0 (0.0)

The profiles of these patients were not significantly different from those reported earlier in Nigeria[1,3,4] and other developing countries.[6,7] Tetanus in developing countries tends to occur in younger patients compared to the developed world where the majority of the cases were in elderly patients who have lost protective antibodies. The lower frequency of tetanus among females in this report might be due to tetanus immunization of pregnant mothers during antenatal care. This may also partially explain why there was no single case of tetanus following delivery in this study. Similar to earlier reports,[1,3] most of the patients were of a low socioeconomic status. These are the category of people that are more likely to live in areas with limited health facilities and are not likely to have received tetanus prophylaxis. The location of the commonest portal of entry on the legs and feet is similar to findings by others.[1,4] This study did not look for the effect of portal of entry on mortality because only two of my patients had wounds in the head and neck region. The only case of snakebite complicated by tetanus was fatal. Habib reported 50% mortality in four cases of tetanus following snakebite in Nigeria.[8] The only case of scorpion sting complicated by tetanus also died.

A very high overall CFR of 57.1% observed in this review is comparable to that in other centres without adequate facilities. Several studies have shown that the mortality rate and CFR from tetanus vary dramatically according to facilities available. Hesse et al.[5] reported a CFR of 50% in Ghana, while Sanya et al.[3] reported mortality rate of 64% from Ibadan in Nigeria. In both cases, there were no facilities for intensive care of the patients.

Al-Kaabi et al.[9] in Saudi Arabia observed reduction in mortality rate to 10% with early and aggressive treatment in the intensive care unit. As reported earlier;[1,3,6] severity of tetanus, presence of complications and short duration of illness were all significant predictors of mortality in this study. Those patients with severe spasms, who were more likely to suffer cardiorespiratory complications of tetanus were more likely to die compared to those with mild spasms. Effective control of severe spasms usually requires heavy sedation and ventilatory support which are not always available to tetanus patients in developing countries where the disease is prevalent. This may explain why addition of chlorpromazine to diazepam in 54.3% patients did not significantly affect the mortality in this study. The mean duration of hospitalization was 12.3±9.0 days with a range of 3-34 days. This is comparable to a report from Pakistan[7] but longer than findings in Benin City, Nigeria.[1] In this study, the longer the duration of hospital stay, the more favourable the outcome. This trend has been reported by others.[1,3] This may be because severely ill patients die soon after admission. The major limitation of this study is the small numbers of tetanus patients managed within the period covered by this review.

Preventive measures to reduce the incidence of this disease, such as wide immunization coverage and health education, should adequately cover the inaccessible sub-urban and rural populations of the country.

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ERRATUM

A discrepancy has occurred in the name of third author in the article titled "A clinicopathological study of urethritis in males" by Khawer Saleem, Babar Mumtaz and Naeem Reza published in JCPSP 2009, Vol. 19 (12): 772-75.

The name appeared as Naeem Reza instead of Naeem Raza.

The name of Naeem Raza may be corrected in the article and read as such.

Editor

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