



Tetanus in Nigeria: Is the End in Sight?

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ABSTRACT

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Background: Tetanus especially neonatal has remained a public health problem and major contributor to morbidity and mortality in developing countries such as Nigeria despite the availability of effective vaccines for over 40years. The institution of preventive and control interventions for tetanus like immunization, essential obstetric care and good cord care as well as education are still very poor in most developing countries and are major contributing factors to the continued existence of tetanus. This study aims at reviewing the status of tetanus cases in UPTH with a view of determining if the end is in sight.

Methods: The records of all cases of tetanus both neonatal and post neonatal treated at the department of Paediatrics University of Port Harcourt Teaching Hospital from the year 1995-2015 were reviewed for age, sex, presenting complaints, portal of entry, immunization status, duration of hospitalization and outcome of illness.

Results: Four hundred and twenty seven cases of tetanus comprising of 253(59.3%) males and 172(40.3%) females. 2(0.4%) did not have any record of their sex. There were 313(73.3%) neonates and 114(26.7%) post neonatal cases. Amongst the post neonatal cases, most of them: 90(78.9%) were above 5years. Most mothers of the neonatal cases were unimmunized and delivered outside health facilities and also most of the children with post neonatal tetanus were either unimmunized or incompletely immunized. The case fatality rate was 45%.

Conclusion: The number and characteristics of cases and mortality rate has remained high despite the availability of effective vaccines over the years. There is need to provide affordable and accessible obstetric care for mothers and strengthen the present immunization coverage in Nigeria to reduce this scourge.

INTRODUCTION

Tetanus especially neonatal has remained a major contributor to morbidity and mortality in developing countries such as Nigeria (Yaguo-Ide and Nte 2009). Global evidence has revealed tetanus as the highest mortality contributor among children after measles in vaccine preventable diseases (WHO 2010). 6.3 million Under 5's died in 2013 from tetanus, nearly 17,000 deaths everyday (WHO 2013). Neonatal tetanus kills a baby every 9minutes (The Eliminate Project: Kiwanis). WHO estimated that 49,000 newborns died from neonatal tetanus in 2013 (WHO 2015). In most developed countries where immunisation coverage and the practice of clean deliveries is high, the disease has come under control with low mortality rates. In the United States, from 2000 through 2007, an average of only 31 cases were reported per year (HSTE Project 2014-2015 Tetanus). This largely preventable disease has however remained a major public health problem in developing countries. In Africa, tetanus is ranked among the top ten most deadly diseases. Sub-Saharan African countries record about 84,000 deaths from tetanus on a yearly basis (TOP 10 diseases in Africa). Low income countries such as Nigeria and India account for most of the deaths from neonatal tetanus (Blencowe et al 2010). Over all, in Nigeria tetanus is responsible for 4% of the neonatal deaths. (Nigeria State data profile 2013). The percentage of neonatal deaths caused by tetanus varies considerably in various states in Nigeria with the highest of 19% reported in Yobe state and the lowest of 1% in Ekiti, Lagos and Osun States. In Rivers state, neonatal deaths caused by tetanus was 3% (NDHS 2013). The prevalence of neonatal tetanus has remained high in many developing countries because a high proportion of deliveries still take place at home or in places where hygienic condition may be poor. In Nigeria, the percentage of deliveries at home has remained very high, only 36% of births in Nigeria are delivered in a health facility (as compared with 35% in 2008), 63% are delivered at home. Northwest had the highest proportion of deliveries at home with 88% followed by North east 79% and the lowest was South east 20%. In Rivers State 49.6% delivered at home and only 49% in a health facility (NDHS 2013). Overall, only 38% of deliveries were assisted by a skilled provider, 22% by a traditional birth attendant, 23% by relatives or other persons and 13% unassisted (NDHS (2013).

Elimination of neonatal tetanus was redefined by 1995 as less than one case per 1000 live births in every district in every country. The target date was however postponed to 2000 because of slow implementation of the recommended maternal tetanus elimination strategies, in 1999, it was reviewed by UNICEF,WHO and UNFPA and the initiative was reconstituted with a 2005 target date for maternal tetanus elimination which was later shifted to 2015(WHO 2015). Nigeria today is still one of the high risk countries that have not yet achieved the maternal and neonatal tetanus elimination

goal yet (WHO 2015). Every case of tetanus in Nigeria indicates a major failure of public health practice because neonatal tetanus can be completely prevented by immunizing females before or during pregnancy, ensuring clean delivery, clean severance of the umbilical cord and proper care of the cord after delivery while post neonatal tetanus can be prevented by ensuring complete tetanus toxoid doses in infancy and giving booster doses at primary and secondary school entry and then every 10years thereafter. Immunisation of pregnant women or women of child bearing age (15-49years) with atleast 2 doses of tetanus toxoid is estimated to reduce mortality from NNT by 94% (Blencowe et al 2010). The percentage of women who received 2 or more tetanus toxoid (TT) injection during their last pregnancy was 48% and 53% of women had their last birth protected against neonatal tetanus (NDHS 2013). The proportion of these women who received 2 or more TT injection during the pregnancy for their last live birth varies considerably across zones ranging from a high of 82% in Southeast to a low of 27% in the Northwest. In Rivers state, 76.5% of women received 2 or more TT injections during their last pregnancy and the percentage of women whose last birth was protected against neonatal tetanus was 80.3% (NDHS 2013). Unfortunately, the unnecessary deaths caused by this highly preventable disease has continued in most developing countries including Nigeria despite the availability of effective preventive measures. This study therefore is aimed at reviewing the trends, morbidity and mortality burden of tetanus over a 20years period with a view of highlighting the current situation in our Center, identifying contributing factors and possibly suggesting ways to stop this scourge.

MATERIALS AND METHOD

The cases of tetanus both neonatal and post neonatal cases managed at the department of Paediatrics of the University of Port Harcourt Teaching Hospital from 1995 to 2015 was reviewed. All cases were diagnosed by Paediatricians using the clinical features of the disease. Details obtained included socio demographic data of patients, presenting complaints, history of the illness, onset interval, incubation period, portal of entry, immunization status, examination findings, management, duration of hospitalization and outcome of illness. All cases were admitted into the tetanus side room of the childrens ward. They all received anti tetanus serum (ATS), IV antibiotics and spasms were controlled with a combination of phenobarbitone, chlorpromazine and diazepam.

Data was analysed using SPSS version 20.0 and presented using simple frequencies and in tables.

RESULTS

Four hundred and twenty seven cases of tetanus comprising of 253(59.3%) males and 172(40.3%) females with male: female ratio of 1:1.5. 2(0.4%) did not have any record of their sex. There were 313(73.3%) neonates and 114(26.7%) post neonatal cases. Of the neonatal tetanus cases, there were 182 (58.2%) males, 129(41.2%) females and 2(0.6%) had no record of sex while the post neonatal tetanus cases had 71(62.3%) males and 43(37.7%) females. Amongst the post neonatal cases, most of them: 90(78.9%) were above 5years. Amongst the mothers for the neonatal tetanus cases, 46(14.6%) received ANC in a health facility, most deliveries were outside a health facility, the place of delivery was however not indicated in most of the records (166:53%), only 29(9.2%) delivered in a health facility, 69(22%) in a TBA's home or at home, 47(15.0%) in a prayer house. Data on cord care for 204(65.1%) patients was missing, cord care with methylated spirit was done by 54(17.2%), 59(18.8%) used robb, 17(5.4%) vaseline, 8(2.6%) herbs. The immunization status of the mothers was largely unknown with 20(6.4%) claiming to have received 1 dose of TT and 28(8.9%) received two or more doses of TT. Among these patients, 40.0% and 60.7% respectively died while amongst the post neonatal cases, Only 8(7.0%) were fully immunized according to the NPI schedule and 5(62.5%) of those who were fully immunized survived. Thus immunization increases the chances of survival. The educational status was not indicated in most (241:56.4%) of the records, 57(13.3%) had primary education, 69(16.2%) had secondary education, and 3(0.7%) had tertiary education. The duration of hospitalization ranged from a few hours to 35 days. The earliest recovery time was 7 days during which period only 7 children recovered. Data on the outcome of 23(5.4%) children was missing, 153(35.8%) children survived, 59(13.8%) either discharged against medical advice or absconded from the hospital while 192(45%) died. 161(37.7%) neonates died compared to 31(7.3%) from the post neonatal age group.

DISCUSSION

There were more males than females in our study with male : female ratio of 1:1.5 this is similar with the report from other studies in Nigeria (Oyedeji 2012, Chukwuka 2015). The reason for this finding is not clear but may partly be explained by the preference given to the male child in the society that makes parents to seek for medical attention promptly and also for the post neonatal cases, the male sex is more likely to engage in risky activities that will lead to injuries that predispose them to tetanus infection. The finding of post neonatal tetanus commonly above 5years of age in our study is consistent with the report by Emodi et al (2011) and Chukwuka et al (2015) which may be attributed to the fact that the levels of protective neutralising tetanus antibodies among this age group may have dropped to non -protective levels.

This is further supported by Aboud et al (2000) who reported low levels of protective antibodies to tetanus in Tanzanian children aged 6-15years following routine immunization in infancy. This highlights the need to target school age children in control of post neonatal tetanus. According to the Nigerian NPI schedule, immunization against tetanus is only provided for pregnant women and infants. The children who miss immunization at infancy are susceptible and contribute to the cases of post-neonatal tetanus seen in the present study. The three doses of TT given in infancy give protective levels of antibody for up to 3-4years of age and these antibody levels subsequently wanes with time as such even children who had 3 doses of TT according to the NPI schedule may still be susceptible to tetanus infection after 3-4years of age (Oruamabo and Igbagiri 1996). In most developed countries, four to five TT vaccination are given as part of the primary immunisation (3 doses in infancy, one at age 15-18months and one at 4-6years) and this is followed by booster doses 10years thereafter(Grange 1991, Vaccination Schedule- Wikipedia). This further calls for the need to strengthen and improve the immunization schedule in Nigeria with the view of also targeting school age children in addition to women of child bearing age and therefore control the scourge from tetanus.

Our review shows that tetanus is still prevalent in our locale and mortality is still high despite the commitment by the public health community globally to the elimination of tetanus. The reason for this is obvious from our review: there is suboptimal utilization of the available preventive and control measures for tetanus as highlighted by low immunisation coverage among the mothers of the neonates and also children studied, poor obstetric care at delivery, poor cord care in our study which had been reported in similar studies in Nigeria (Lagunju 2008, Akuhwa 2010, Adegboye 2012, Alhaji et al 2013, Babatunde et al 2014). Most mothers in our study had low level of education which has been a consistent finding by most authors in Nigeria (Osaghae and Amuabunos (2012), Oyedeji et al (2012), Oruomabo and Mbagbaw 1986). Osaghae et al (2012) in his study illustrated that there was a vicious cycle of low level of maternal education contributing to lack of antenatal care, low immunization, delivery outside a health facility, poor cord care and other risk factors for neonatal tetanus. These prevalent conditions have persisted for several years and are the reasons for continuous existence of tetanus in Nigeria thus indicating that not much impact has been made in terms of combating this preventable disease and therefore a pointer to the failure of our health care system. In developed countries with better female education, adequate vaccination coverage and neonatal care, the numbers of cases of neonatal tetanus reported were rather small when compared to developing countries (CDC 2014, Blencowe et al 2010). Among the identified portal of entry amongst the post neonatal cases, broomstick injury accounted for the majority (45.9%) of

cases which contrasts with the finding by Akuhwa et al (2010) who reported suppurative otitis media and circumcision by traditional surgeons as major portals of entry.

The case fatality rate in this study was 45% which falls within the range of 15-70% mortality reported by other authors in Nigeria (Anah et al 2008, Emodi et al 2011, Alhaji et al 2013, Chukwuka et al 2015). This calls for a reappraisal of our control programme on tetanus in Nigeria.

CONCLUSION / RECOMMENDATION

Tetanus is still prevalent with high mortality rate. There is need to promote female education and increase the level of public awareness on tetanus and the associated risk factors. Immunisation campaigns for women of child bearing age (15-49years) should be strengthened. The health facilities should be made more accessible and affordable to pregnant mothers and children by offering them free or subsidized health care services. Vaccination of children with booster doses of tetanus toxoid at primary and secondary school entry should be introduced as part of the routine immunisation schedule. The School health program should be strengthened to ensure full immunisation coverage for all school attendees.

LIMITATIONS

There was repeated strikes by the health workers especially in 2014 which may have been the reason why only one case of neonatal tetanus was recorded in 2014 as most cases would have presented to private health facilities to seek medical care. Poor record keeping system in our hospital resulting in a lot of missing data and the values used in this study are actually an underestimate of the true picture.

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