

Childhood tetanus from snakebite in Warri: a ten-year retrospective review

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ABSTRACT

Background: Childhood tetanus from snakebite is a rare occurrence in Nigeria. It occurs more in adolescents and adults males. **Aim:** We report cases of tetanus in children following snakebite in Warri. **Methods:** Case notes of the children with tetanus from January 2000 to December 2009 at GN Children's Clinic and Central Hospital Warri were used. **Results:** Only three cases were documented in 10 years and are presented below. **Conclusion:** Though tetanus from snakebites in children may be rare in our environment, there should be intensified efforts in eradicating the potentially fatal disease.

Key words: Tetanus, children, snakebites, Warri, Nigeria

INTRODUCTION

Tetanus from snakebite in children is a rare occurrence in Nigeria and even in the northern part of Nigeria where snakebite is more common, it occurs more in rural adult farmers.^[1] It also occurs more commonly in males who are not only more exposed to rural farm work,^[1] but also do not routinely receive booster doses of tetanus toxoid beyond infancy.^[2] Treatment of snakebites usually involves incision made on the areas of the snakebites by traditional doctors, making it difficult to say whether the tetanus arose from the bites or the scarifications.^[1] The rarity of tetanus from snakebites is because the amount of tissue damage following most snakebites is less when compared to that following human or dog bites.^[3] The more the tissue damage, the higher the risk of infection with the strict and obligatory anaerobes, the *Clostridium*

tetanii.^[4] Moreover, majority of the snakebites do not involve evenomation which if it occurs leads to high tissue damage. The case fatality rate is usually high because of inadequate immunity and available resources to manage these patients. The cases reported here also re-emphasize the inadequacies in our healthcare delivery as all of the three patients are adolescents who did not take tetanus toxoid every ten years as recommended^[5] because this is not emphasized by the health workers as it is not in the Expanded Programme on Immunization (EPI) schedule.^[6]

We report three cases of tetanus seen over a ten-year period; between 2000 and 2009.

METHODOLOGY

This is a case series. Cases of childhood tetanus from January 2000 to December 2009 at GN Children's Clinic, the major private children's hospital in Warri and Central Hospital Warri, which is the major/referral hospital in that area servicing more than two million people, were reviewed. All the available information were gathered.

CASE 1

A fourteen-year old girl presented in our clinic from a riverine area with a two day history of inability to open her mouth, jerky movements and in pains. Ten days prior to presentation, she was bitten by a snake which was treated by the traditional doctor. Part of the treatment given to her by the traditional doctor included incision at the site of the snake bite just above the left lateral malleolus. He then applied some herbs which he chewed before application. She had no fever or loss of consciousness. She had all the immunizations according to the Expanded Programme on Immunization, but did not receive any other immunization after nine months.

She was found on examination to have trismus, rhizus sardonius with abdominal rigidity. She was conscious and had generalized unprovoked spasms. There were scarification marks about four centimeters above the left lateral malleolus. A diagnosis of generalized tetanus was made and she was admitted in the tetanus room. All the investigations done showed no abnormality.

She was placed on intravenous diazepam at the dose of 0.2mg/kg/dose given 6hourly, staggered with phenobarbital at 5mg/kg/day also given 6hourly (the interval between the two sedatives is 3hours, so that a sedative is given every 3hours). Paraldehyde 5ml was given intramuscularly for breakthrough spasms. A spasm chart was kept to monitor the frequency and duration of the spasms. The diazepam was changed to chlorpromazine 25mg 6hourly as a result of poor control of the spasms.

There was no human tetanus immunoglobulin, so she was given ATS 20,000 IU after a test dose. 10,000 IU was given intramuscularly and 10,000 IU given

through an infusion. She was also given intravenous crystalline penicillin 2mega units 6 hourly and metronidazole infusion 500mg 8hourly.

Other ancillary treatment included robaxin, pentazocine, ibuprofen ferrous and folic acid tablets. Artesunate-mefloquine antimalaria combination and dextrose saline infusions were also given to her. The physiotherapists were involved from the onset of the treatment. Tetanus toxoid 0.5cc was given to her before discharge. She did very well and was discharged after eight weeks of admission.

CASE 2

A fifteen year-old boy who presented in our clinic having been bitten by a snake while playing with friends around 1.30pm. Prior to presentation, the site of bite had been incised and venom and blood sucked out by one of his friends, by mouth. A tourniquet was applied at the middle of his left leg using the shirt of one of his playmates.

He was found to be agitated and crying with no bleeding diathesis. There were scarification marks on the dorsum of the left foot with crusts of blood. Apart from a pulse of 128/min, all the vital signs were normal and stable. Examination of all the systems showed no abnormality. All investigations carried out were normal. An intravenous infusion of dextrose-saline was given. He did very well and was discharged after forty-eight hours of observation.

However, 19-23 days later, he represented with lockjaw, provocative spasms and generalized stiffness, fever and in pains. There was no injury before this representation.

He was found on examination to be pyretic pale with a pulse rate of 120/min and a blood pressure of 100mmHg systolic and 60mmHg diastolic. He had generalized hypertonia with nuchal and abdominal rigidity. Other clinical findings were normal. A diagnosis of generalized tetanus was made with a differential diagnosis of cerebrospinal meningitis. He was admitted in the tetanus room and some investigations ordered for.

The full blood count showed a packed red

cell volume of 16% with normal white cell count both total and differential. The cerebrospinal fluid analysis was normal.

He was commenced on intravenous injection of ceftriazone 1g 12hrly, intravenous metronidazole infusion 500mg 8hourly, intravenous infusion of 5% dextrose-saline, intravenous injections of chlorpromazine 50mg 6hourly, staggered with phenobarbita 140mg 6hourly, (this was spaced in such a way that he received a sedative every 3hours). Paraldehyde 5ml was given for break through spasms. Anti-tetanus serum 20,000 IU was given to him after test dose, half intramuscularly and the other half via intravenous infusion. A spasm chart was kept to monitor the frequency and duration of spasms. Due to religious belief, the mother initially refused blood transfusion and so he was given erythropoietin 150 IU/kg/dose three times a week with ferrous sulphate, folic acid and multivitamins. The packed cell volume instead of increasing dropped further to 14 % and then the mother consented to blood transfusion. He was then transfused with O⁺ blood after grouping and cross-matching. A week after the blood transfusion, the packed cell volume was 15% and was transfused again.

By the 4th week of admission, the spasms became less frequent, occurring only on strong provocation and so the sedative were changed to oral. He continued to make steady progress and was discharged after eight weeks and two days of admission. Tetanus toxoid 0.5cc intramuscularly was given just before discharge.

CASE 3

An eleven-year old boy presented to our clinic two weeks after he was bitten by a snake while he was trying to catch a rabbit that ran into a hole. He presented with a three-day history of inability to open his mouth, with constant groaning, jerky movements of the upper and lower limbs and generalized stiffness of the body. Following the bite on his right index finger, he was taken to a native doctor who applied some ground herbs on his swollen hand. He was also given some to drink. He had only two immunizations in his first year of life, but was given tetanus toxoid

injection at age six years when he had a bottle cut and.

He was found on examination to be conscious with generalized hypertonia, groaning with abdominal rigidity. A diagnosis of generalized tetanus was made and he was treated along the line of the first case. However, six days after presentation, he developed epistaxis. The prothrombin time, partial thromboplastin time, platelet count and bleeding time were all normal. The ENT surgeon was consulted who diagnosed bleeding from the Little's space and treated with sufratulle nasal packs. He did well and was discharged five weeks after admission. Tetanus toxoid injection was given before discharge.

DISCUSSION

Tetanus occurring from snakebite may either result from the traditional doctor's method of treatment^[1,7] or from the snakebite itself and that it is why tetanus shots are part of the routine treatment of snakebites.^[8] In most cases, incisions are made at the site of the bite.^[1,7] All our patients had incisions made at the site of the bites. The ratio of male:female here is 2:1. This is probably because males are more adventurous. However, even in the studies in adults in the north, more males were involved than females which was attributed to the fact that more males are involved in farm work than females.^[1] It has also been documented that females are more resistant to infections than males which is explained in part because the production of immunoglobulin are linked to the X-chromosomes,^[9] and females have two of these, (XX).^[10] Out of the three patients, only the third patient had any form of booster after the first year of life. This poor coverage of children beyond one year is as a result of failure by the government and health care providers to inform the public that booster doses of tetanus toxoid are necessary beyond that period. Fatunde *et al.* in a study in Ibadan noted a very low coverage beyond infancy.^[2] Studies in Warri has also shown that apart from the newborn period, the case fatality is higher in adolescents with tetanus generally than in any other period of childhood.^[11] This is because the immunity acquired from vaccination in infancy would have waned

off by this period.^[2] All our patients survived both the snakebites and the tetanus infection, although Ehui *et al.* noted fatal outcome^[7] that was not related to the snakebite per se but the overall high mortality rate of tetanus from any route because of inadequate facilities for good management of tetanus in general. Majority of snakebites are without evenomation and with minimal devitalized tissue which would have increased the severity and also higher incidence of tetanus from snake bites. Only three cases were seen over a ten year period, making it an average of one in every three years, an incidence much higher with tetanus from human bites^[12] or dog bite.^[13] The second patient has a very turbulent period arising not mainly from tetanus but from septicemia which complicated the tetanus. The repeated blood transfusion was not from the snakebite itself as there was no bleeding diathesis following the bite and with benefit of hind sight, this second patient who presented immediately after the snakebite should have been given tetanus toxoid as part of his treatment.

CONCLUSION

Tetanus from snakebite though rare, should be recognized as a possibility. There should be increased awareness that immunization does not end with the Expanded Programme on Immunization Schedule. Tetanus toxoid boosters every 10 years should be emphasized and the T1-T5 tetanus shots given to pregnant women should be extended to adolescent females and males, or be made part of a comprehensive school health programme.

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REFERENCES

1. Habib A.G. Tetanus complicating snakebite in northern Nigeria: clinical

presentation and public health implications. *Acta Trop* 2003;85:87-91.

2. Fatunde OJ, Familusi JB. Postneonatal tetanus in Nigeria: A need for booster doses of tetanus toxoid. *Niger J Paed* 2001;28:35-38.

3. Fight Bite, sited on 11/04/2010. <http://www.impactdnurse.com/?p=1393>

4. Stephen S.A. Pathogenesis of tetanus. In: Nelson Textbook of Pediatrics; 18th Edition. Saunders Publishers, p1228-1231.

5. Unicef Expanded Immunization Coverage. Cited on 11th October 2009. http://www.unicef.org/immunization/index_cover_age.html

6. Ehui E, Kra O, Oualtara I, Tanon A, Kassi A, Eholie S, Bissinagnene E, Kadio A. Generalized tetanus complicating a traditional medicine applied for snakebite. *Bull Soc Pathol Exot* 2007;100:84-85.

7. Lucile Packard. Children's Hospital at Stanford. Snakebites. Cited on 11th October 2009.

<http://www.pch.org/DiseaseHealthInfo/HealthUrinary/poison/snakehtml>

8. Fish EN. The X-files in immunity: sex-based differences predispose immune responses. *Nat Rev Immunol* 2008; 8:737-44.

9. Furdon S, Clark D.A. e-medicine. Sited on 11/04/2010.

<http://emedicine.com/article/975909--overview.June2009>

10. McGil Ugwu GI, Okolugbo NE. Childhood Tetanus in Warri Niger Delta. *Nig Journal of Gen Practice* 2009;8:45-49.

11. Agrawal K, Ramachandrudu T, Hamide A and Dutta TK. Tetanus caused by human bite on the finger. *Ann Plast Surg* 1995;34:201-2.

12. Braddour LM, Eridom EE. Up date for patients. Patient Information: Animal bites. Sited on 11th April 2010.

<http://www.utdol.com/patients/content/topic.do?opjckey=PPE4SNNpuMjpf>

doi: <http://dx.doi.org/10.14194/ijmbr.2210>

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