

## Neonatal Tetanus in Bria Regional Hospital. Cases Reports

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### Abstract

Neonatal Tetanus is still rampant in different parts of the world especially in developing country, although it is a preventable disease. The preventive measures are still non-accessible due to lack of health structures or conflicts and the umbilical non-septic deliveries and umbilical stump are a high risk to neonatal tetanus.

The high mortality in NT is due to lack of specific management neonatal NICU structures, tools, skills and competences. The best strategy remains to vaccinate pregnant women with tetanus toxoid vaccine before delivery. The conflict resolution will play a big impact to alleviate the burden of healthcare inaccessibility.

**Keywords:** Neonatal Tetanus; NICU; Tetanus Toxoid Vaccine

### Introduction

The World Health Organization (WHO) reported about 34 000 neonatal tetanus (NT) deaths worldwide in 2015 [1]. Since 1988 there was a tremendous reduction of NT deaths, 96% from an estimated 787000, this is significant progress towards the maternal and neonatal tetanus elimination (MNTE) goal. Despite the real progress remarked in recent decades, the disease remains an important global public health problem, particularly in poor underdeveloped countries.

Tetanus is an infectious disease, caused by toxigenic strains of a bacteria called *Clostridium tetani*, a gram-positive bacterium. The bacteria are usually found in soil, dust and manure and enter the body through breaks in the skin - tears, cuts or puncture wounds caused by contaminated objects. Neonatal Tetanus most often occurs during the delivery through the cutting of the umbilical cord using non-sterile techniques and applying non-sterile traditional remedies to the umbilical cord stump, but the umbilical infection is not always evident.

For neonatal tetanus, carrying out deliveries with unhygienic hands or on a contaminated surface create a high-risk factor for maternal and neonatal tetanus (MNT). Tetanus is not contagious or transmissible from person to person. *Clostridium tetani* produces a toxin that acts on the central nervous system to cause muscular rigidity and spasms typical of tetanus. In Neonatal Tetanus, symptoms appear 3 to 28 days after birth, averaging 7 days. The inability to breastfeed, excessive crying may appear as the first alert for tetanus in neonates.

Characteristic features of tetanus are trismus, risus sardonicus and opisthotonos, laryngospasm, broken bones, hospital-acquired infections, blockage of the main artery of the lung or pulmonary embolism, Pneumonia, breathing difficulty, can easily lead to death. The case-fatality rate of Neonatal Tetanus without treatment approaches 100%, though with intensive care this can be decreased to 10 - 20% [2,11].

In 2021, humanitarian actors in the Central African Republic provided humanitarian assistance to 1.8 million people among 2.8 million people in need of humanitarian assistance. Although the area has faced growing insecurity and new risks, including explosive devices, the humanitarian actors intensified their response through a multi-sectoral approach, resulting in reduced vulnerabilities and protection of a

population affected by the conflict. The population has suffered from a lack of basic primary health care and the consequences have been disastrous. The most prominent cause of morbidity is still malaria and respiratory diseases but some evitable diseases, diseases covered by the vaccines delivered during EPI have been spotted [10].

Bria Regional Hospital is situated in Bria, the capital of Haute-Kotto, one of the 14 prefectures of the Central African Republic. The local population is estimated to be 50000. Although Neonatal Tetanus cases in CAR have decreased in recent years sporadic cases of NT are still found in the country. The cases of Neonatal tetanus presented in this paper were admitted in Bria Regional Hospital (2021) and coming from the Haute-Kotto Region in the East of Central African Republic, one from Ippy in a zone called Laffolo and another one came from the transhumance population in Aibando towards Ouadda in Bria. The source of information files is archived in the same hospital.

### Case Reports

The 1<sup>st</sup> case of Neonatal Tetanus was referred from Aibando Health Center to the Regional Hospital of Bria on 15<sup>th</sup> April 2021. The baby of 10 days was born at home at the 7<sup>th</sup> month and cried at first breath, the mother was not vaccinated prior to the delivery and the newborn did not receive any vaccine at birth (BCG and OPV). The reason for premature delivery was not known. The delivery was performed by a traditional mother attendant with non-aseptic tools to conduct a normal delivery.

On examination, the baby was febrile and spasms with a history of 3 days of difficulty of breastfeeding and weakness with a weight of 1650 grams. The infant was weak, dyspneic with an RR of 78, lungs are clear. Spams and rigidity all the body, the abdomen is a flat and tense abdominal muscle with the umbilic slightly inflamed. The diagnosis of Neonatal Tetanus was clear with such a typical clinical presentation. Some laboratory exams requested among others Hb 13.3, Blood glucose 17 mg/dl.

The treatment was initiated with Oxygen 1 l/min, metronidazole, cloxacillin, gentamycin, diazepam was administered for 22 days and 500 IU Human Tetanus Immunoglobulin IM. The fever was treated with Perfalgan, the umbilical site was cleaned with chlorhexidine gluconate. The antibiotic was changed due to persistent of fever after 72 hrs. Metronidazole, ampicillin and cefotaxime for 14 days. The newborn was admitted in neonate unity isolated in dark room to avoid the complication. The patient presented some complications as digestive hemorrhage clinically objectivated as melena with suspicion of aggressive alimentation and suspicion of necrotizing enterocolitis. The patient was put on strict IV fluids (G10). The patient was on later fed by nasogastric tube. The patient spent 27 days and was discharged with 2000 grs considered cured.

The second case was referred from Laffolo Health Center (45 Kms from Bria) to Regional Hospital of Bria on 6 December 2021. A newborn of D7 born at home, the mother did not benefit from the ANC and vaccination. The newborn was presenting generalized spasms, respiratory distress and difficult of breastfeeding for 2 days. The diagnosis was obvious and the patient was put on tetanus treatment: local care of the umbilicus with chlorhexidine solution, SAT, immunoglobulin, metronidazole, cloxacillin, gentamycin, diazepam for spasms, Perfalgan for fever and fluids D10 the patient was put on oxygen through nasal prongs transfer to isolated dark room. The general state of the patient was not improving with the treatment and died on 2<sup>nd</sup> day of admission.

### Discussion

Both patients are coming from a conflict zones of the East of the Central African Republic-CAR (Lafollo and Aibando) two regions where the armed groups are still operating and the accessibility is still a big challenge for many NGO and Humanitarian actors to conduct their routine activities including Vaccination campaigns and regular EPV programs. The conflict zones are at high risk for MNT, today 14 countries including Central African Republic, have yet to achieve elimination goal in 2020 and where maternal and neonatal tetanus remains a big challenge mainly due to wars, conflicts, and politically vulnerable environment [4].

The 2 mothers did not attend the antenatal care clinics and did not receive the normal package including Vaccines, Ferrous tablets, consultations, and para clinical and lab exams. Neonatal tetanus depends mainly on the immunization of the mother during pregnancy and therefore the goal of elimination of maternal tetanus. The lack of immunization is still among the risks to contract Neonatal Tetanus, this was the case in Kilifi County in Kenya most mothers of neonates with tetanus tested (82%) did not have detectable levels of antitetanic antibody in their blood [3].

The start of symptomatology for both patients was in the first week after birth which is the same as most of the literature with the incubation period falling between 3 days to 21 days after birth [5,6]. The diagnosis in both cases was clinical as in many other studies and literature many patients present with complaints of difficult breastfeeding and muscle rigidity and spasms [1,3,6] the other laboratory tests were done were for supportive for clinical monitoring, include hemoglobin, blood glycemia, malaria rapid tests. The FBC, CSF, and blood culture were not performed for both patients and it did not change the course of management.

The treatment initiated is from the MSF guidelines, the patients were admitted to the Neonatal Department. The patients were admitted to the Neonatal department for specific care in the hospital, they received human tetanus immune globulin (TIG), umbilical wound care with chlorhexidine, diazepam to control spasms was administered by intravenous not by electrical syringe, metronidazole, cloxacillin, and gentamycin as antibiotics. Cefotaxime, penicillin, and ceftriaxone were not part of the antibiotic's treatment. The oxygen was administered through neonatal nasal prongs and a nasogastric tube inserted to maintain alimentation with expressed breast milk. The patient did not get mechanical ventilation by CPAP nor the magnesium sulfate as it is described in some literature [7].

### Conclusion

Neonatal tetanus is still a real public health threat due to different challenges despite the efforts by Governments, WHO and other Humanitarian actors for MNTE.

The best strategy remains to vaccinate pregnant women with tetanus toxoid vaccine; especially immunizing pregnant mothers with at least two doses of tetanus toxoid vaccine before delivery, supporting countries to conduct neonatal tetanus surveillance, and promoting safe child delivery practices.

In the Central African Republic, as the wars and conflicts play a big role in entertaining the progress of MNT in the communities, promotion of peace and political stability will emphasize the vaccination practice and the MNTE in general.

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### Ethical Consideration

The research ethical perspectives were considered including confidentiality and anonymity of participants, honesty and respect of intellectual property.

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