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Situational Analysis of Togo's First Pneumococcal Meningitis Epidemic in 2023

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Abstract

Introduction: Meningitis is a major public health problem in Togo, which records cases every year with the occurrence of meningococcal outbreaks. In 2014, PCV13 was introduced into the routine EPI. In 2023, the country notified its first pneumococcal meningitis outbreak in the Oti-Sud district. The aim of the present study is to analyze this epidemic.

Methods: This is a descriptive cross-sectional study based on epidemiological surveillance data from the Oti-Sud district (population: 125699 inhabitants), analyzed using Epi-info 7.2.6.0 software. The interval of confidence used is 95%, with a significance level of less than 0.5%.

Results: The district crossed the epidemic threshold in week 4 of 2023. A total of 149 cases of meningitis were registered, with a cumulative attack rate of 118 per 100,000 inhabitants. The median age was 15 years (11-24 years). The 5-14 years age group was the most represented (64/149 or 42.95%, IC 95% = [34.88-51.31]). Children under 5 years were less affected (6%). The M/F sex ratio was 1.07. Only 3 children under 10 years were vaccinated with PCV13. Streptococcus pneumoniae was isolated (culture, PCR) in 23 of 128 samples taken (18%), the rest of samples were negative. The setotyping on 17 cases of Sp have given 11 serotypes 1, 2 serotypes 5 and 4 are no serotype. Four cases of sequelae (headache (1), hypoacusis (1), difficult of concentration (1) and motor deficit (1)) were recorded among confirmed cases (17.39%) and referred for appropriate care. The case-fatality rate was 8.05%.

The main response interventions that have helped to control the epidemic were early case detection, quality of care, risk communication and community engagement, supported by the SURGE and EMTs deployed.

Conclusion: The first outbreak of pneumococcal meningitis was brought under control, but it highlights the evolving epidemiological profile of pathogens affecting preparedness. The deployment of SURGE and EMTs improved the quality of case management, including sequelae.

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Introduction

Meningitis is a serious infection of the meninges, the membranes covering the brain and spinal cord. The disease can be caused by many different pathogens including bacteria, viruses and fungi. Neisseria meningitidis, Streptococcus pneumoniae (Spn) and Haemophilus influenzae type b (Hib) are the most frequent causes of bacterial meningitis.

Togo is part of the African meningitis belt and records annually meningitis cases and deaths. Although the country has experience in the management of meningococcal meningitis outbreaks over the past years.

Meningitis is a major public health problem in Togo, which records cases every year with the occurrence of meningococcal outbreaks [1-10].

In 2014, PCV13 has been introduced in the routine EPI.

The current meningitis outbreak in Togo is caused by Streptococcus pneumoniae. Although the outbreaks of meningitis due to Streptococcus pneumoniae are less frequent than the meningococcal meningitis, the pneumococcal meningitis present high case fatality rate (36%-66% in the meningitis belt) and is frequently associated with severe sequelae. Pneumococcal meningitis is more difficult to treat and neurological sequelae, such as intellectual and behavioral deficits, seizures, hearing loss and motor deficits, may occur in 50% of survivors.

The current meningitidis outbreak is unusual as it is due to Streptococcus pneumoniae. The country has never managed a pneumococcal meningitis outbreak, so not experienced in the past, and the national capacity and preparedness are limited.

In 2023, the country notified its first pneumococcal meningitis outbreak in the Oti-Sud district.

The aim of the present study is to analyze this epidemic.

Methods

This is a descriptive cross-sectional study based on epidemiological surveillance data from the Oti-Sud district.

The Oti-Sud district is located in the Savanes Region, in north of Togo, which is part of the African meningitis belt, the population of the district is 125 699 inhabitants. Data was analyzed using Epi-info 7.2.6.0 software. The interval of confidence used is 95%, with a significance level of less than 0.5%.

Results

Epidemiological situation

On 15 February 2023, the Ministry of Health of Togo officially declared a meningitis outbreak in Oti Sud district, Savanes region, in the northern part of the country.

From week 51 of 2022 (ending 25 December 2023) to week 11 of 2023 (ending 19 March), a total of 149 suspected cases of meningitis with a cumulative attack rate of 118 per 100,000 inhabitants, and 12 deaths have been reported in the Oti Sud district. The Case-Fatality (CFR) rate was 8.05%.

Streptococcus pneumoniae was isolated in laboratory by culture and PCR in 23 the rest were negative. 23 of 128 samples taken (18%) have been confirmed by Polymerase Chain Reaction (PCR) and culture for Streptococcus pneumoniae at the regional laboratory and the national reference laboratory named National Institute of Hygiene (INH). The rest was negative.

The setotyping have been done in the National Institute of Hygiene on 17 cases of Sp and the results were as follow: 11 serotypes 1, 2 serotypes 5 and 4 were no serotype.

Nearly 85% of cases are over 10 years of age (born before the introduction of 13-valent Pneumococcal Conjugate Vaccine (PCV13) in Togo in 2014).

The median age was 15 years. The 5-14 age group was the most represented (64/149 or 42.95%, IC 95% = [34.88-51.31]), followed by the 15-24-year age group with 27% of all cases. Children under 5 years were little affected (6%).

Only 3 children under 10 years were vaccinated with PCV13.

Males and females are equally affected, the M/F sex ratio was 1.07.

The PCV13 coverage in the region is 100% for the third dose.

Four cases of sequelae have been recorded among confirmed cases (17.39%) with systematic search for sequelae: 1 case of headache, 1 case of hypoacusis, 1 case of difficult of concentration and motor deficit (1 case). Those cases have been referred for appropriate management in reference specialist health centers.

No imported cases have been reported in neighboring countries. However, the risk of spread was not negligible given the rapid transmission of the disease, the population over nine years of age not protected by the routine vaccination introduced in Togo in 2014, the mobility of the people, the threatened security situation in the Savanes region from the crisis in the Sahel which has limited public health interventions and resulted in population displacement, and the proximity of the Oti Sud district to Benin (Tanguiéta district) and Ghana.

Public health response

Many response interventions have been set up to respond to the outbreak regarding the WHO Emergency Response Framework.

An incident management system has been established to coordinate outbreak response activities. Coordination meetings are held on a weekly basis. The national outbreak response plan has been developed and validated.

Strengthening and Utilizing Response Groups for Emergencies (SURGE) team and Emergency Medical Team (EMT) were deployed in the field in the region and district to support local teams in the response activities.

Cross-border meetings with Benin and Ghana are organized to share information about outbreak response activities and improved cross-border collaboration and surveillance.

To strengthening surveillance and early case detection, briefings on meningitis are held for health facility managers, community health workers, community relays and community leaders.

Active case finding was conducted in health facilities and in the community. Outbreak situation reports were daily developed and disseminated.

Lumbar puncture was systematically done on all suspected cases and samples were transported to reference laboratories for confirmation.

Health centers have been provided with antibiotics (Ceftriaxone) and other medicines. All suspected cases were referred to care management centers for treatment.

Risk communication and community engagement activities were implemented, especially, radio spots and emission broadcasted regarding community-based surveillance and the importance of early health care seeking, community sensitization, dialogue meetings at community level.

Discussion

Children under 5 years of age were little affected, covered by the Pneumococcal Vaccine (PCV13) introduced in 2014, whose coverage in the Savanes region is 100% for the 3rd dose.

The case-fatality rate (8.05%) was high compared with meningococcal epidemics recorded in recent years in Togo (2017 and 2019), where the case-fatality rate varies between 2.3% and 5%.

This case-fatality rate remains in line with that observed during pneumococcal outbreaks recorded in other African countries (Burkina Faso, Ghana, Central African Republic and Chad), where case-fatality rates ranged from 4% to 18% among suspected cases, and from 10% to 46% among confirmed cases.

The main response measures used to bring this epidemic under control were:

- Strengthening surveillance: early detection of cases
- Improved case confirmation and management, with the deployment of SURGE and EMT teams.
- Risk communication and community engagement, which helped to have community support.

Conclusion

Togo has experienced his first outbreak of pneumococcal meningitis which was brought under control, but it serves as a reminder of the changing epidemiological profile of germs, which influences preparedness. The implementation of SURGE program has been important to in the response to this outbreak, because the deployment of SURGE and EMT teams to support the local team improved the quality of case management, including research and treatment of sequelae.

The lesson learned was the importance of quality of preparedness, implementation of prevention activities such vaccination and community engagement.

References

1. Pneumococcal meningitis- Togo, WHO. 2023
2. Meningitis- WHO Fact sheet.
3. Meningitis- Health topics, WHO.
4. WHO - Pneumococcal Disease.
5. Cadre pour la mise en œuvre de la stratégie mondiale pour vaincre la méningite d'ici à 2030 dans la région africaine de l'OMS.
6. WHO. Vaccination schedule for Togo.
7. Meningococcal disease-Togo - World Health Organization (WHO). 2017
8. OE Abodji.
9. AY Sadji, KM Akoli, FD Salah, I Maman, C Nikemia Pessinaba, JWA Halatoko, Molecular epidemiology of acute bacterial meningitis due to Streptococcus pneumoniae in Togo. International Pathogenic Neisseria Conference. 2020; 2023.
10. Meningitis Epidemic in the Oti South District, Situation Report. 2023