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Molecular epidemiology of acute bacterial meningitis caused by *Streptococcus pneumoniae* in Togo from 2020-2022

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Background

Bacterial meningitis is one of the leading causes of mortality in young children and elderly people worldwide. Although the PCV13 vaccine has been introduced in the Expanded Program on Immunization in Togo against *Streptococcus pneumoniae*, it becoming the most isolated bacterial from cerebrospinal fluid since 2018 in Togo.

Aim/Methods

We aim to describe the molecular epidemiology of *S. pneumoniae* serotypes responsible for meningitis in Togo. A cross-sectional study was conducted using country meningitis routine surveillance specimens from January 2020 to June 2022 received at the "Institut national d'hygiene" (INH). Serotyping was performed by rt-PCR using QuantStudio5 on specimens tested positive for *lytA* gene, specific for *Streptococcus pneumoniae* by PCR (protocol validated by US CDC). Serotyping was carried out on specimens whose storage conditions were adequate and with sufficient quantity.

Results

Streptococcus pneumoniae was the most isolated bacterial, 98.23% (111/113) from 2020 to 2022. Non-typable samples represented 32.93% (27/82). PCV13 serotypes represented 65.45% (36/55), while non-PCV13 serotypes represented 34.55% (19/55). Among the identified serotypes, serotype 1 was the most frequent with 43.63% (24/55), followed by serotypes 12F/44 and 18C*/18F/18B/18A with 12.72% (7/55) and 9.09% (5/55) of cases, respectively. Serotype 1 was more frequent in the Savanes region, representing 75% (18/24) of cases, and in individuals aged 30 and over, with 37.5% (9/24) of cases. Serotype 12F/44 (PCV13) was more frequent in aged group 10-14 years old (42.86% (3/7)). Serotype 18C/18F/18B/18A was present in almost all age groups. No association was established between identified serotypes and disease progression or age and positive culture.

Conclusions

PCV13 serotypes are the most dominant. The emergence of non-vaccine serotypes highlights the need to strengthen surveillance and review vaccination strategies against invasive pneumococcal infections. This situation also raises the need to develop new vaccines that include these emerging serotypes.

