

# Streptococcal pharyngitis in children with painful throat: missed opportunities for rheumatic heart disease prevention in endemic area of Africa

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Group A  $\beta$ -haemolytic Streptococcus (GAS), also known as streptococcus pyogenes, causes pharyngitis (1). The burden of GAS infections is unknown in Mozambique due of lack of surveillance system, but repeated GAS infections are surely occurring in early ages since rheumatic heart disease (RHD) is endemic in the country (2). Despite the high prevalence of rheumatic heart valve disease (RHVD) detected in schoolchildren from a peri-urban area of Maputo using echocardiographic screening in school children (3), data on the incidence and prevalence of GAS pharyngitis and rheumatic fever (RF) in the area are scarce (4). We designed a study to determine the proportion of GAS infection in children with pharyngitis attending outpatient's clinic of the referral hospital from this area.

Between July and September 2014 we studied consecutive children aged 5 to 14 years who presented to a secondary hospital of Maputo City with painful throat. Children's guardians were invited to allow their child to participate in the study. At time of consultation by a health worker the researchers collected data on age, gender, previous antibiotic therapy, housing, family income and mother's scolarisation. Children with recent history of antibiotic therapy were excluded. The treatment given to the children by the health provider was registered. Before the beginning of the treatment a throat swab was obtained for determination of the presence of GAS infection. Culture and Gram staining was done. Christie-Atkins-Munch-Peterson (CAMP) test was performed for all samples that tested positive to identify streptococcus agalactiae (5,6). The commercially available Prolex Streptococcal

Grouping Latex Kit (Pro-Lab Diagnostics, 2012) was used for identification of Lancefield groups A, B, C, D, F and G. Data collected were entered and descriptively analyzed using Epi Info 7. The Mozambique's National Bioethical Committee approved this study; all guardians gave consent for their children's participation.

Eighty-six patients were recruited but throat swabs could not be obtained in five children. Thus data from 81 children were analysed, 45 (55.6%) of which were girls. On physical examination of these children with painful throat 41 (50.6%) had fever, 25 (30.8%) presented inflammation of the oropharynx and 26 (32.1%) had painful cervical adenomegaly. Sixty-three mothers (77.7%) were not formally employed; 46 children (56.7%) came from families with an income lower than the minimal salary in the country.

In this geographic area, known to have high prevalence of RHD in school children, of the 81 specimens analysed 5 (6.1%) tested positive for GAS, despite the study being implemented outside the peak season for upper respiratory infections. Thus, the percentage of bacterial pharyngitis may be higher in certain periods of the year. Although neighboring countries use penicillin as the drug of choice for tonsillopharyngitis and advocate single-dose parenteral administration of benzathine penicillin as the most effective, many favour oral administration twice daily for 10 days. The World Health Organization (WHO) recommends intramuscular penicillin as the first choice for RF prophylaxis (3) as this inexpensive drug can eradicate bacteria from throat or skin; if given orally penicillin should

be given for 10 days (7-10).

Our study reveals gaps in diagnosis and management of streptococcal pharyngitis in an endemic area for RHVD. High-grade fever, sore throat, absence of cough, tonsil exudates and tender anterior cervical adenopathy—considered as the best combination of clinical predictors for childhood streptococcal pharyngitis—may be used for diagnosis in this age group. Their use in association with rapid tests would allow timely diagnosis and prompt treatment of GAS infections, reducing loss opportunities to prevent RF as well as stopping the transmission chain in schools and households. Ideally, health providers would collect information about patients' signs and symptoms, obtain rapid antigen testing on all patients with pharyngitis (with confirmatory testing used for patients whose rapid test is negative) and treat only those with a positive test for GAS. This being impossible in most endemic areas (including Mozambique), there is need to review recommendations for the management of painful throat in highly endemic areas for RHVD, particularly to consider the use of a single benzyl penicillin injection in highly suspected cases (11). Although hypersensitivity reactions are the major concern with use of penicillin, true allergy to this medicine (which is IgE-mediated), accounts for very few of all reported adverse drug reactions (12,13).

We suggest that protocols for management of upper respiratory infections in children from endemic areas for RHVD should consider bacterial pharyngitis a priority and explore tools to support its timely diagnosis, thus avoiding missed opportunities for prevention of RF when children contact the health system.

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## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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