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Use of McIsaac Scoring and Rapid Streptococcal Antigen Detection Test for Diagnosis of Group A Streptococcal Pharyngitis in Children

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ABSTRACT
Acute pharyngitis is one of the most common conditions seen in pediatric outpatient area. It is difficult to make diagnosis of Group A streptococcal pharyngitis GAS) only on basis of clinical findings. In place of Throat swab culture because of poor availability, delay for result, rapid antigen detection test (RADT) has shown promising results overcoming practical issues with throat culture. The McIsaac clinical scoring has been recommended as reliable clinical tool for diagnosis for GAS pharyngitis. In resource limited setting, we evaluated agreement between Clinical McIsaac score and RADT for diagnosis of GAS pharyngitis. Fifty children of 3-15 years age presented with features of bacterial pharyngitis and tested positive for RADT were enrolled for study. Then McIsaac clinical score was calculated for these children. Out of 50 children with positive RADT 40(80%) had McIsaac clinical score of >3 and 10 (20%) had clinical score of <3. At places where culture facilities are not available and non-affordable, point of care test like RADT shall be used for diagnosis of GSA pharyngitis. Clinical McIsaac scores are also useful although comparatively less reliable. Efforts to make diagnosis of GAS pharyngitis in more objective way helps in accurate diagnosis with treatment and hence antibiotic stewardship.

INTRODUCTION

In Outpatient service, Pediatricians come across acute pharyngitis as one of the most common conditions. It is most commonly caused by viruses and is self-limiting. Group A beta streptococcus (GAS) is most common bacterial cause of pharyngitis accounting for 15-30 percentage of sore throat in children under 15 years of age[1]. GAS pharyngitis occurs typically in school going children and adolescents and rare below 3 years of age. Based on sole clinical assessment diagnosis of group A beta streptococcal pharyngitis is difficult because of overlap of other causes[2]. Untreated such cases can lead to suppurative and nonsuppurative complications like acute rhematic fever. Although most common cause of pharyngitis in children are viral frequency of antibiotic prescribing is high leading to misuse of antibiotics[3]. So, it is necessary to prove GAS as a cause of pharyngitis in children for appropriate treatment. Various tools like clinical, point of care test and swab culture are available for diagnosis for GAS pharyngitis. The McIsaac scoring system has been recommended as a reliable clinical tool for diagnosis[4]. Throat culture is considered as gold standard for diagnosis of GAS. But we can get result only after 48hours which delays treatment and few Opd patients don't come for follow up. Also cost and availability of culture remains important obstacle at many small places in India. So, some point of care test like rapid antigen detection test (RADT) is needed to overcome these issues. Some studies suggested use of such rapid detection test as adequate for diagnosis of GAS pharyngitis[5]. In resource limited settings this study is carried out to know agreement between McIsaac score and rapid streptococcal antigen test.

MATERIALS AND METHODS

This Prospective study was carried in pediatric outpatient department in year 2024. Children between 3-15 years of age presenting with sore throat were assessed clinically and those with symptoms pointing towards bacterial cause (GAS) were subjected to rapid streptococcal antigen detection test by taking throat swabs. Clinical clues used as pointer towards GAS as etiology were Pharyngeal exudates, tender anterior cervical nodes and scarletiform rash along with fever. Those with obvious viral etiology like running nose, conjunctival congestion, diarrhea and cough were not tested. Fifty children who came positive for rapid streptococcal antigen detection test were included in study.

Inclusion Criteria: Fifty children from age 3-15 years presented with sore throat and with positive rapid streptococcal antigen detection test.

Exclusion Criteria:

- Children already on antibiotics.
- children <3yrs old or >15 yrs of age.
- Those who were uncooperative and refused for throat swab.
- Those clinically diagnosed to have viral illness like EBV or herpangina.

These included children were divided in three age groups 3-7 yrs,7-12 yrs and 12-15 yrs.

Rapid Streptococcal Antigen Detection Test: Throat swabs were collected by experienced and well-trained person. Rapid streptococcal antigen detection test was done by using Binax NOW STREP A CARD kit manufactured by M/s Abbott diagnostics Scarborough USA imported in India by Abbott India. This point of care test has high specificity (98.4%) and sensitivity of 89.7% with diagnostic accuracy of 96.4%. Cost per test was around 400 Indian rupees. After collecting throat swabs test procedure was done according to manufacturers instructions. The presence of colored lines on test line (T) and control line (C) of the kits indicate positive results. Result was available in less than 15 minutes. McIsaac score[6] was then properly calculated and given scores as below for these 50 cases with positive rapid streptococcal antigen test.

Criteria	Points
Temperature >38 C	1
Absent Cough	1
Swollen tender anterior cervical nodes	1
Tonsillar swelling or exudates	1
Age 3-15 years	1

RESULTS AND DISCUSSIONS

Out of 50 children 30 were male and 20 were female. Ten (20%) patients were from 3-7 age group. Twenty-eight (56%) patients were from 7-12 age group and 12(24%) from 12-15 yrs age group. All 50 (100%) included children had fever. Tonsillar exudates were present in 30 (60%) children. Tender anterior cervical nodes were present in 28(56%) patients. Apart from this scarletiform rash was present in 15(30%) cases. Petechial rashes on palate were present in 25(50%) cases. Abdominal symptoms of nausea and vomiting were present in 13 (26%) cases. Of the 50 patients with positive rapid streptococcal antigen test 25(50%) had McIsaac score of >4 and 15(30%) had McIsaac score of 3. In ten (20%) patients McIsaac score was <3. These children were treated with oral Amoxycillin at dose of 50mg/kg/day for complete 10 days. Most of them became asymptomatic by 3-4 days of treatment. However, they were ensured to complete 10 days of treatment for eradication.

Fig. 1: RADT KIT Used

Fig. 2: Pharyngeal Erythema with Exudates

Pediatricians often end up in overusing antibiotics for pharyngitis in children although majority cases are caused by viruses. GAS, most common bacterial cause of pharyngitis is difficult to diagnose solely on clinical grounds because of overlapping features. To prevent suppurative and nonsuppurative complications with GAS pharyngitis proper antibiotic therapy is necessary after accurate diagnosis. From antibiotic stewardship point of view, it becomes necessary to have some simple bedside clinical score or point of care affordable test to confirm GAS pharyngitis. Also, these are one of the most common conditions in outpatient area so measures to become more objective while diagnosing prescribing antibiotic will help lot in rational antibiotic use. The IDSA (Infectious Diseases Society of America) recommends swabbing of throat and rapid antigen detection test and or culture for diagnosis of GAS pharyngitis[7]. Accurate diagnosis and treatment are necessary for rapid decrease in contagiousness, for reduction in transmission to family members and classmates[8]. Throat Swab culture is considered as gold standard for diagnosis of GAS pharyngitis. In our study we could not use it for cost constraints. Also, as it takes 48-72 hours for report and many cases are lost to follow up. Rapid antigen detection test (RADT) is now easily available in India with comparatively less cost (rupees 400 per test). Major advantage of RADT is that it is point of care test and quick to perform. However, usefulness of RADT has been questioned because of its less and variable sensitivity when compared to conventional culture methods[9]. Nonetheless recent studies have shown sensitivity of RADT equal to culture[10,11]. In current study, we tried to see agreement between clinical McIsaac score and RADT. We included only those cases with positive RADT and then calculated McIsaac score of them. The McIsaac scoring system has been recommended as a reliable clinical tool for diagnosis of GAS pharyngitis. Total 40 (80%) cases with positive RADT had McIsaac score of >3. Only 10 cases (20%) had less than 3 McIsaac score with positive RADT. So this tells that for accurate diagnosis of GAS pharyngitis both tools are good although Clinical scoring is less reliable comparatively. Although throat swab culture is gold standard because of practical difficulties with it as discussed before we shall use RADT as point of care test for accurate diagnosis. RADT is comparatively cheaper, doesn't require special equipment's or special manpower.

CONCLUSIONS

As we get the result with in 15 minutes, we can start amoxycillin upfront and that will not only relieve symptoms of that case early but also will be beneficial for community by reducing transmission. If RADT is not available at least we shall use McIsaac Clinical score which we saw reasonably sensitive in picking of GAS pharyngitis. Considering acute pharyngitis as one of the common presenting complaints in pediatric OPD using point of care test like RADT and McIsaac clinical score we will be more rational in prescribing antibiotics.

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