Brief Reports

The Validity of Diagnostic Criteria for Streptococcal Pharyngitis in Integrated Management of Childhood Illness (IMCI) Guidelines

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Summary

The WHO's Integrated Management of Childhood Illness (IMCI) programme is being implemented in Turkey with an additional section relating to throat problems for our country's adaptation. The aim of this study is to evaluate the validity of this additional part and suggest new combinations for the diagnosis of streptococcal pharyngitis to improve the guidelines. Throat swabs were obtained from 245 children between 0 and 17 years of age with signs and symptoms of upper respiratory tract infections. Considering the throat culture based diagnosis as the gold standard, the validity of the symptoms alone and in combinations were calculated. The combination in Turkey's IMCI guideline was found to be 36.9 per cent sensitive and 68.3 per cent specific. Sensitivities of combinations including at least two of the following three symptoms, namely sore throat, pharyngeal erythema, and pharyngeal exudates or sore throat, pharyngeal erythema, and fever, were 76.9 and 87.7 per cent, respectively. Specificities of the same combinations were 49.4 and 30.6 per cent. We concluded that new combinations with a higher sensitivity may be considered as a criterion for antibiotic treatment.

Introduction

Since the mid-1990s the World Health Organization (WHO) has been leading the development of a programme known as Integrated Management of Childhood Illness (IMCI)[1] which has a guideline that replaces a number of child health programmes that cause the greatest global burden, while allowing the content to be adapted to an individual country's needs.[2] This programme has been implemented in Turkey since 1999.

Acute rheumatic fever, which is the complication of streptococcal pharyngitis is still a significant cause of mortality and morbidity in Turkey.[3] In the original IMCI guidelines, throat problems were not included, but a section has been included in our country's guidelines.[4] There, a combination of clinical findings are used for the decision of antibiotic treatment. The aim of this study was to evaluate the validity of these combinations and try new combinations in order to improve the guidelines.

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Materials and Methods

All children between 0 and 17 years of age with signs and symptoms of upper respiratory tract infections such as sore throat, cough, rhinorrhea, pharyngeal erythema or exudate who were admitted to pediatric outpatient clinics of two major university hospitals in Ankara, between November 2001 and February 2002, were enrolled in the study. The symptoms and signs of the patients were noted and their throat swabs were obtained and cultured by the standard method for the identification of group A beta hemolytic streptococci (GABHS).

To evaluate the validity of clinical features and their combinations, throat culture based diagnosis was accepted as the gold standard. Comparing with throat culture, sensitivity was defined as the percentage of true positives and specificity as the percentage of true negatives.

Results

A total of 245 children were included: 129 males (52.7 per cent) and 116 females (47.3 per cent). Ages of the children ranged between 0 and 17 years with a mean of 5.8 ± 3.7 years. In 65 (26.5 per cent) of all the throat cultures GABHS was isolated. The most

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TABLE 1
Signs and symptoms of the patients and validity of the each sign and symptom for streptococcal pharyngitis

Sign or symptom	Total number of patients (*n*)	Number of patients with GABHS (*n*)	Sensitivity (%)	Specificity (%)
Sore throat	126	49	75.4	57.2
Pharyngeal erythema	236	63	96.9	3.9
Pharyngeal exudate	64	21	32.3	76.1
Cough	143	32	49.2	38.3
Fever	133	38	58.5	47.2
Rhinorrhea	117	25	38.5	48.9
Hoarseness	21	2	3.1	89.4
Headache	49	17	26.1	82.2
Lymph node enlargement	31	7	10.8	86.7

TABLE 2
Validity of the combinations of signs and symptoms

Combination	Sensitivity (%)	Specificity (%)
Sore throat and pharyngeal exudate[a]	30.8	86.1
Sore throat or pharyngeal exudate[b]	76.9	47.2
Two of following signs[c] Pharyngeal erythema Pharyngeal exudate Lymph node enlargement	36.9	68.3
Two of following signs[d] Sore throat Pharyngeal erythema Pharyngeal exudate	76.9	49.4
Two of following signs[d] Sore throat Pharyngeal erythema Fever	87.7	30.6

[a] WHO, ARI guideline; [b] Steinhoff's proposal[5]; [c] IMCI, Turkey adaptation; [d] new suggestions.

frequent signs and symptoms in the patients in whom GABHS was isolated were pharyngeal erythema (96.9 per cent), sore throat (75.4 per cent) and fever (58.5 per cent). The validities of each sign and symptom are presented in Table 1.

The validity of several combinations of clinical findings, found in previous studies,[5] Acute Respiratory Infections (ARI) programme of WHO,[6] Turkey's adaptation of IMCI guidelines, and two new suggestions developed depending on the results of our study, are shown in Table 2.

Discussion

In most of the circumstances the clinicians are supposed to decide the treatment of pharyngitis based on the clinical picture of the patient rather than the result of a throat culture. To help the clinicians in this respect, there is a guideline in Turkey's adaptation of IMCI.[4] The main aim of our study was to calculate the sensitivity and specificity of the clinical features in this guideline. We also evaluated the guideline in WHO's programme on ARI of children.[6] In this programme the physician is advised to prescribe penicillin if a patient with a sore throat is found to have pharyngeal exudate and tender cervical lymphadenopathy. Steinhoff, *et al*.[5] investigated the sensitivity and specificity of these guidelines and concluded that sensitivity of this combination is very low. They proposed another guideline which increased the sensitivity to 84 per cent, but decreased the specificity. In our study population we studied these combinations as well and our results were somewhat similar.

We found that IMCI guidelines have low sensitivity but high specificity. Ideally a diagnostic tool is expected to be highly sensitive and specific, but usually it is not possible. The properties of the disease in a particular region should be taken into account in deciding whether a diagnostic tool should have high sensitivity or specificity. In Turkey, streptococcal infections and their complications remain important.[7,8] IMCI is a programme which aims to decrease mortality and morbidity, therefore it is expected to have highly sensitive classification criteria for throat problems in Turkey. In this study we proposed two new combinations with higher sensitivities. The first combination we suggested (at least two of the following three symptoms: sore throat, pharyngeal erythema, and pharyngeal exudate) had a sensitivity and specificity which was very close to Steinhoff, *et al*.'s proposal.[5] Another combination (at least two of the following three symptoms: sore throat, pharyngeal erythema, and fever) had a higher sensitivity but specificity decreased to 30.6 per cent. However, population-based studies with larger patient groups will be helpful to improve the current guidelines on streptococcal pharyngitis.

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Risk of Seizure Recurrence following a First Unprovoked Seizure in Children

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Summary

The aim of the study was to determine seizure recurrence rate and risk factors of a first unprovoked seizure in children. Ninety-one children aged 2 months–15 years who had a first unprovoked seizure were enrolled and followed-up. History and physical examination were undertaken. The results were displayed as a Kaplan–Meier survival curve. Multivariate analysis was performed with Cox proportional-hazards model. The cumulative probability of recurrence rate was 68 per cent and incidence density was 6.85 per 100 person-months. The cumulative risk of recurrence was 50 per cent at 4 months and 66 per cent at 12 months. No risk of seizure recurrence was found in this study.

Introduction

Seizure recurrence after a first unprovoked seizure is considered to provide a rational decision for treatment. Previous reports showed the rate of recurrence varying from 23 to 71 per cent[1–4] due to different methodology, heterogeneity of the epilepsy, and several biological variables that influence the prognosis. The main factor associated with a risk of recurrence is an electroencephalogram (EEG) and remote symptomatic etiology.[5,6] The aim of this study was to determine the seizure recurrence rate following a first unprovoked seizure in Thai children and the risk factors of recurrence.

Materials and Methods

A prospective cohort study was conducted. Ninety-one children aged 2 months–15 years seen at the Child Neurology Clinic of Hatyai Hospital, the regional center of southern Thailand, were followed-up during April 1998 to December 2002. A first unprovoked seizure included a cluster of seizures, all of which occurred within 24 h, a series of seizures lasting more than 30 min, or a series of seizures lasting less than 30 min between which consciousness was not regained. Children with prior neonatal seizures, prior febrile seizures (FS), or prior other provoked seizures were also included. Exclusion criteria included typical absence seizures, myoclonic seizures, and infantile spasms because the recurrences were 100 per cent. Non-epileptic events, such as syncope, were also excluded.

Seizures were classified according to seizure semiology and/or EEG in accordance with the International League Against Epilepsy (ILAE).[7] No candidates were given anti-epileptic drugs for treatment of a first unprovoked seizure. Physical, neurological examinations and an EEG were performed on all children. A CT scan was performed when clinically indicated. Independent variables were collected concerning age, gender, seizure type, prior FS, family history of FS and epilepsy in first-degree relatives, delayed development or underlying neurological disease, and EEG classified as normal; epileptiform activity (focal or generalized spikes or spike and wave complexes); abnormal non-epileptiform activity (abnormal focal or generalized background pattern). The patients were followed-up at the Neurology Clinic every 3 months and by letter to

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