

VALIDITY OF THE CLINICAL FEATURES IN DIAGNOSING ACUTE OTITIS MEDIA AMONG CHILDREN UNDER 60 MONTHS OF AGE

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ABSTRACT

Aim of study: The aim of study is to assess the validity of clinical features in diagnosing acute otitis media among children under five years of age. **Material and methods:** Case-series study design was adopted for this study, based on 10% sample size of the average monthly attendance to the pediatric department in Mosul General hospital (n=1192). **Results:** A sample of 150 patients suffering from acute respiratory infections were studied, 29 patients (19.33%) had acute otitis media, their main age was 21.2 ± 13.9 months, while male to female ratio was 1.41:1. **Conclusion:** According to the present study, among all the individual clinical indications of acute otitis media, earache had the best characteristics also with high positive predictive value.

KEYWORDS: Otitis media, validity of clinical symptoms, otoscopy

INTRODUCTION

Acute otitis media is an acute inflammation of the middle ear and tympanic membrane (TM) with extravasation behind the eardrum, without reference to a specific etiology or pathogenesis.^[1]

Acute otitis media is a serious health care concern worldwide, not only because of the distress it cause the patient and his/her family, but also because of the substantial economic burden it imposes on the health care system. Also, inappropriate antibiotic treatment of the condition encourages the emergence of multidrug resistant strains of bacterial pathogens.^[2]

Acute otitis media can occur at any age, but it is mainly a disease of the young, occurring most commonly between the ages of 3 months and 3 years. The peak incidence of the disease is between the ages of 6 and 11 months, and its incidence may be increasing. This apparent increase may be due to an actual increase in the disease, increased vigilance on the part of pediatricians and other care providers, or a combination of the two. By one year of age, at least 60% of children have experienced 1 episode and 17% have suffered from at least 3 episodes of acute otitis media. Early age of onset of acute otitis media has been identified as a risk factor for recurrent episodes. So, the onset of acute otitis media during the first year of life is important because the majority of children with

multiple recurrences of acute otitis media have their first episode before the age of 12 months.^[3]

Acute otitis media is usually a complication of an acute upper respiratory tract infections. Numerous large studies have documented the bacterial pathogens associated with the diagnosis of acute otitis media, with the exception of *Moraxella catarrhalis* the list of bacteria causing acute otitis media has not appreciably changed from many years and appear to be similar worldwide. Approximately 35-40% of cases are caused by *Streptococcus pneumoniae*, 20-25% by nontypeable strain of *Haemophilus influenzae*, and 10-15% by *Moraxella catarrhalis*. The frequency of *Moraxella catarrhalis* acute otitis media appears to have increased in the last decade.^[4]

MATERIAL AND METHODS

It was decided to collect the study sample from pediatric department of Mosul General hospital.

Case definition: study cases are patients under five years of age brought to hospital at the outpatient and emergency pediatric department who have been diagnosed by a specialist pediatrician as acute respiratory infections, and examined by otoscopy which reveals the presence or absence of acute otitis media.

Case-Series study design was adopted for this study, based on 10% sample size of the average monthly

attendance to the pediatric department in Mosul General hospital during October 2019 to end of March 2020 (n=1192). Accordingly 150 patients below five years of age with acute respiratory infections of both sexes were randomly chosen. The study period was between 1st October 2019 and 1st April 2020.

The children then were examined (by the investigator and by the specialist pediatrician) for body temperature which was recorded by adding 0.5°C to axillary's temperature, and for signs of acute otitis media by otoscopy, which include a description of the tympanic membrane, to evaluate the position (bulging, retracted, or neutral), color (dark red, yellow, blue, or white), landmarks (landmarks that should be visible in a normal ear include the pars flaccida, the malleus, and the light reflex below the umbo), degree of translucency (translucent or opaque), and mobility (mobile, sluggish mobility, or immobile), and again the findings were recorded in the questionnaire paper.

The validity of each diagnostic indicator were estimated. The Chi-squared test with Yate's continuity correction was used for statistical analysis of association between discrete variables. P values lower than 0.05 were considered significant throughout the analysis of data.

Table: sensitivity and specificity of the studied symptoms.

Symptoms	Sensitivity%	Specificity%
Loss of appetite	72.4	28.9
Diarrhea/vomiting	20.7	80.2
Rubbing/pulling of ear	37.9	80.2
Pain on lying	55.2	84.3
Reduced hearing	13.8	89.3
otorrhea	27.6	98.4
Loss of balance	6.9	95.0

DISCUSSION

Acute otitis media is one of the most common conditions encountered in community practice pediatrics. Despite the huge impact of upper respiratory tract infections on the economy of families, of employees, and of health care system, and although that the examination for acute otitis media is an everyday occurrence for the general physicians and pediatricians, criteria for diagnoses are often loose, leaving pediatricians often uncertain of their diagnoses, and the pediatrician often perceives that the diagnosis of acute otitis media is based on guesswork rather than accurate clinical evidence.^[5]

Accurate diagnosis is equally essential to avoid the over diagnosis which results in unnecessary medication and surgery, and the under diagnosis which causes delay in therapy and consequence complications of acute otitis media.^[6]

Although acute otitis media is the one of the most common diseases in childhood, the diagnosis of acute otitis media is difficult, that because circumstances are

RESULT

A sample of 150 patients suffering from acute respiratory infections studied, 73 (48.67%) were female and 7 (51.33%) were males, male to female ratio was 1.05:1. The age range of patients with acute respiratory infections was from 1 day to 60 months with mean age of (21.2±15.26 months).

From those 150 patients with acute respiratory infections, 29 patients (19.33%) had acute otitis media, their mean age was (21±13.9 months), while the male to female ratio was 1.41:1.

The following table demonstrates the sensitivity and specificity of each symptoms in the diagnosis of acute otitis media. All the symptoms were having low sensitivity except the loss of appetite, which has a rather good sensitivity (72.4%).

Diarrhea and/or vomiting, rubbing and/or pulling of ear, pain on lying, and reduced hearing have a very good specificity which ranges from 80.2% to 89.3%. otorrhea and loss of balance showed an excellent specificity (98.4% and 95.0%) respectively.

unfortunately frequently far from optimal, and equipment for diagnosis are often compromised, the child may be uncooperative, signs and symptoms of acute otitis media and those of common cold are mostly the same, and parents appear to have strong opinions concerning correct diagnosis and treatment.^[7]

The present study suggests that certain clinical criteria could be useful for practicing pediatricians to improve their ability to diagnose acute otitis media in children under five years of age, and to make a fast easy diagnosis with a high degree of certainty at the out-patient clinic depending on the clinical presentation of the child.^[8]

The study sample was obtained from children (under five years of age) who were assessed by the treating pediatricians and considered as having acute respiratory infections which is a precursor of the acute otitis media.^[9]

Symptoms evaluated in the present study showed that earache was significantly found in (55.2%) of patients

with acute otitis media which is nearly similar to the results of kaly et al., who showed that 54% of patients suffered from earache, this may attributed to almost relatively similar sample size used (n=208), and the same age group enrolled (1-4 years).^[10,11]

CONCLUSIONS

The present study provided data on the validity of clinical features in diagnosing acute otitis media in children under five years of age. Accordingly the following points can be drawn from this work:

1. earache, pain on lying, otorrhea, and rubbing/pulling of ear were significantly associated with acute otitis media.
2. loss of appetite had the highest sensitivity among all the individual clinical indicators, but with low specificity. Similarly, fever showed high sensitivity with low specificity.
3. specificity of otorrhea was the highest among the studied symptoms, but with poor sensitivity.

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