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Management of Acute Otitis Media in Children in District Hospital IV Bamako

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Abstract— *Background-Acute otitis media (AOM) is an inflammation of the middle ear cavity whose course does not exceed two to three weeks usually caused by viruses or bacteria, it mainly affects infants [34]. The objective of this work was to study the therapeutic principles of acute otitis media in children from 0 to 15 years of age in our department. Methodology: This was a cross-sectional study, carried out in the ENT department of the Cs ref of commune IV over a period of three months from March 1 to May 30, 2020. Data were collected through a questionnaire. The following variables: age, sex, occupation, risk factors, clinical appearance, treatment and course were studied. Results: We identified 85 cases of acute otitis media in three months, the average age was 29 months with extremes from 01 months to 15 years. We identified 85 cases of acute otitis media in three months, the average age was 29 months with extremes from 01 months to 15 years. We observed a slight male predominance (60%). We observed a slight male predominance (60%). The main contributing factors were: nasopharyngitis (87.1%) followed by presence of children in community life (28.24%) and hypertrophy of the pharyngeal tonsils (adenoids) (15%). The main contributing factors were: nasopharyngitis (87.1%) followed by presence of children in community life (28.24%) and hypertrophy of the pharyngeal tonsils (adenoids) (15%).The main clinical signs were otalgia (25.88%), otorrhea (21.18%) and fever (12.94%). The attack was unilateral in 59% of cases and affected more the left side (66.3%). The most recovered stage was undrained purulent otitis media 35.59%. Treatment was based on antibiotic in 95.29% of cases, analgesic in 85% and the only complication found was acute mastoiditis. Conclusion. Acute otitis media mainly concerns children. It affects both boys and girls. Management is based on antibiotic therapy and complications are rare.*

Keywords—*Acute otitis media-child- treatment.*

I. INTRODUCTION

Acute otitis media is defined as an acute inflammation of the middle ear cavity whose course does not exceed two to three weeks [1,2,3,4,5,6]. Particularly common in children, it is observed in 62% of children under one year of age, and in 83% of children under 3 years of age [7,8,9,10,11].

It is a frequent reason for outpatient Ear Nose Throat consultation, which has been estimated at one in three consultations in children under five years of age [3,9,12,13,14]. The child is more concerned than the adult. Indeed, although AOMs (Acute Otitis Media) are generally benign, the possible occurrence of serious complications (mastoiditis, meningitis) and sequelae (deafness) has justified for many the use of systematic antibiotic therapy, despite a spontaneous cure rate of up to 80% [6,15,16,17].

Three out of four children had at least one Acute Otitis Media before the age of 2. This prevalence in children is the consequence as well as its frequencies in terms of bacteriological ecology (by the prescription, useful or not, well conducted or not, of antibiotics) [6,10,18,19,20,21].

In Nigeria, a 2009 study on the epidemiology of otitis media in 600 children aged 0-12 years by Amusa et al. revealed a prevalence of Acute Otitis Media of 11.8% [22]. In Mali, few articles have been published on acute otitis media. Nevertheless, in Bamako, a study conducted in 2011 which claimed that 54% of consultations carried out at the district IV hospital in Lafiabougou were recorded in ENT [1,23].

The value of this work is to provide data that can support decisions about the management of acute otitis media, given the complications that the child may undergo.

Objectives

General objective

To study the therapeutic principles of acute otitis media in children (AOM) aged 0 to 15 years at District IV Hospital in Bamako during the study period from 1 March to 31 May 2020.

Specific objectives

1. Describe sociodemographic characteristics in children 0 to 15 years of age with Acute Otitis Media (AOM)
2. To determine the different stages of acute otitis media (AOM) in children 0 to 15 years of age
3. To assess the effectiveness of treatments in children aged 0 to 15 years with Acute Otitis Media (AOM)

II. METHODOLOGY

Framework

Our study took place in the ENT and Head and Neck Surgery Department of the District IV Hospital in Bamako.

Type of study

We conducted a cross-sectional study.

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Study period

The study took place over a period of three (03) months, March, April and May.

Study population

The study involved children in the age group (0 to 15 years) received in ENT consultation in the ENT department of the District IV Hospital of Bamako.

- Inclusion criteria

This study included children (0 to 15 years) seen in ENT consultation, suffering from acute otitis media whose parents agreed to participate in our study.

- Non-inclusion criteria

The following were not included in our study:

- Children over the age of 15 with AOM
- Children aged 0 to 15 years with AOM whose parents did not agree to participate in our study
- Children from 0 to 15 years old who came for other ENT conditions

Total were selected n= 85

Sampling methods and sample size

Sampling methods

We used the non-probability sampling method i.e. children aged 0 to 15 years with AOM who came for consultation who will be selected.

Sampling calculation

$N = [z^2(p.q.)]/i^2$

z=1.96

p = prevalence of ENT pathologies in District IV Hospital; p = 0.836 (source Statistics and Health Informatics, Regional Health Directorate)

i = accuracy = 10%

q =1-p; q=1-0.836=0.164

N= 85

Data collection techniques

We used the multi-part questionnaire to collect our data. A comprehensive ENT examination was performed in all children aged 0 to 15 years in total 85. The data were recorded on a survey sheet designed for this purpose with the informed consent of the child and the parents.

Data capture and analysis

These data were entered on Word 2007 and analyzed on Epi info 6.0 French version and SPSS 21.

Ethical considerations

This study was conducted with the agreement of the hospital administrators, the informed consent of the patients. The results were published anonymously and were not disclosed by name.

III. RESULTS

Epidemiology

Age

TABLE 1: Age distribution of Children

Age	Number	%
0-5	45	52.9
6-10	21	24.7
11-15	19	22.4
Total	85	100

The age group from 0 to 5 years was majority 52.9%.

Sex

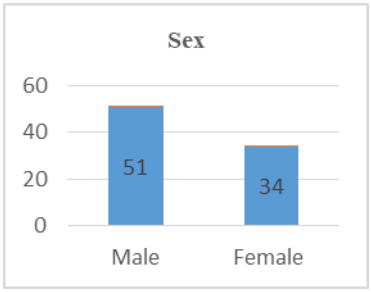

Figure 1: Distribution of children by sex

Male patients were the most represented in our sample with 60% of cases or 51 patients.

Clinical data

The condition was unilateral in 50 patients (59%).

Enabling factors

TABLE 2: Distribution of children by enabling factors

Enabling factors	Number (%)
Vaccination status	30(35.29)
Community life	24(28.24)
Toilet uncovered	19(22.35)
Passive smoking	15(17.65)
Viral infection of the airways	14(16.47)
Cold season	14(16.47)
Promiscuity	9(10.58)
Allergy	8(9.41)
Gastroesophageal reflux disease	5(5.88)
Dorsal decubitus	4(4.71)

Children with an up-to-date immunization schedule of 35.29%

Reasons for consultation:

TABLE 3: Reasons for Consultation

Reasons for consultation	Number	%
Intense Otalgia	22	25.88
Purulent otorrhea	18	21.18
Irritability	15	17.65
Tragus douloureux au toucher	14	16.47
Tragus painful to the touch	12	14.11
Hearing loss on earwax plug	12	14.11
Fever	11	12.94
Painful feeding	9	10.59
Anorexia	7	8.24
Insomnia	6	7.06
Screaming and crying	4	4.71

In our study, otalgia accounted for 25.88%

Other ENT signs

TABLE 4: Distribution of children with other ENT signs

Other ENT signs	Number	%
Recent fetid rhinorrhea	21	24.71
Nasal obstruction	6	7.06
Dyspnoea	4	4.70
Sore throat	3	3.53
Purulent rhinorrhea	3	3.53
Snore	2	2.35
Dysphagia	1	1.18
Clear rhinorrhea	1	1.18
None	44	51.76
Total	85	100

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Our study showed that 51.76% of children did not have other ENT signs.

Otoscopic signs: The stages of acute otitis media

We found especially the stage of undrained suppurative otitis 35.29%, followed respectively by the congestive stage 34.12% and drained suppurative 30.59%.

Therapeutic data

TABLE 5: Distribution of children by medication used

Antibiotic	**95.29%**
Analgesic	85%
Nasopharyngeal disinfection	76.47%
Ear drops	65.88%
Corticosteroids 62.35%	62.35%
Others	3.53%

The antibiotic was prescribed in 81 cases or 95.29%.

Evolution of the appearance of the eardrum under treatment

TABLE 6: The appearance of the eardrum on day 1.

Appearance of eardrum	Number	%
Undrained collected eardrum	30	35.29
Congestive eardrum	29	34.12
Drained eardrum	26	30.59
Total	85	100

Eardrum collected undrained was found in 35.2%.

TABLE 7: Distribution of children according to the aspect of evolution of the eardrum on Day 3.

Aspect of evolution of the eardrum at day 3	Number	%
Normal eardrum	35	41.18
Good hearing	24	28.24
Regression of eardrum inflammation	12	14.11
Not specified	14	16.47
Total	85	100

After reassessment of the tympanic state on otoscopy after the initiation of treatment, we found a favorable evolution in 35 cases or 41.18%.

TABLE 8: Distribution of children according to the evolutionary aspect of the eardrum on day 6.

Aspect of evolution of the eardrum at day 6	Number	%
Normal eardrum	79	92.94
Slight redness	5	5.88
Purulent otorrhea	1	1.18
Total	**85**	**100,0**

The healing of the eardrum is 92.94%.

TABLE 9: Distribution of children according to the aspect of the evolution of the eardrum at day 8.

Aspect of evolution of the eardrum at day 8	Number	%
Normal eardrum,	82	96.47
Hearing loss	2	2.35
Persistence of inflammation	1	1.18
Total	**85**	**100**

We noted a normalization of the eardrum with cessation of purulent discharge in 96.47%.

IV. DISCUSSIONS

The purpose of the present study was to investigate the therapeutic principles of the management of acute otitis media in children aged 0 to 15 years in the nose, throat and ear diseases department of District IV Hospital Bamako.

Socio-demographic aspects

Age

The most represented age group was 0 to 5 years with 52.9%. Data from Bationo JMG [24] in Burkina Faso had estimated at 72.2% and from Doit and Coli [25] in France which oscillated at 75%.

However, they are lower than those of Ouédraogo [26] in Burkina Faso which was 94.7% per 100 patients and Boukalo [27] in Côte d'Ivoire which had found 88.3%, but higher than those of Diambra [28] in Côte d'Ivoire which was articulated at 44%.

Sex

Male children were the most represented in our sample with 60%, which is not consistent with other studies that have mainly mentioned a female predominance.

Bationo JMG [27] in Burkina Faso found a male predominance with 64.4%, similar to our study and that of Diambra [28] in Côte d'Ivoire which also estimated 62.4% in favor of the male sex. These frequencies are different from those of Ouédraogo [26] in Burkina Faso, Boukalo [27] in Côte d'Ivoire, Cissé et al. [29] in Senegal estimated at 74%.

Enabling factors

These included gastroesophageal reflux disease (5.88%), vitamin deficiencies, prematurity and climatic factors influencing to some extent the evolution of these conditions. However, there has been a slight increase in periods of extreme heat, which could be explained by the marked use of air conditioning (air conditioning, ventilation) to cool off and also to sleep outdoors to avoid overheated houses thus increasing contact with environmental pollution for 46.27% [30,31,32]. A rate that is higher than that found in our study with 16.47% of cases.

Clinical data

Functional signs

In our study, sudden onset earache is the key symptom that brings parents to the consultation, other signs are frequently found during viral infection of the upper airways. Others signs are frequently found during viral infection of the upper airways. In the study by Bationo JMG [27] in Burkina Faso, rhinitis was the least frequent associated pathology with 33.3% of cases, or 1 patient in 3. Ouédrago [26] Burkina Faso obtained 38.5% of rhinitis associated with acute purulent otitis media. Diambra [28] in Côte d'Ivoire estimated at 35.4%.

This state of affairs does not seem to be consistent with the data in the literature where rhinitis and nasopharyngitis are the ENT pathologies most associated with otorrhea [14,33,34,35].

Clinical aspect

Clinically, of the 85 cases of acute otitis media studied, the main symptom was otalgia in (25.88%), otorrhea (21.18%), painful tragus 16.47% and fever (11.16%). This result is close to that of Bourrous et al [36] where otalgia was found in the majority of cases with a frequency of 89.7%. This is the same

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observation made by Chhetri [37] where otalgia was found in all patients (100%) followed by hearing loss 91.68% and fever 76.4%. On the other hand, in the study of Clavelin-truchon [38], fever was the main sign in 82% of cases followed by otalgia in 80% of cases. In our study, unilateral acute otitis media was the most common with 59% (50 cases) while the bilateral form accounted for only 35 cases (41%). It is recognized in the literature that bilateral involvement is rare and occurs mainly in infants and patients with weakened terrain (immune or nutritional deficiency) [9,14,32,39,40].

Almost half of the patients, 35.29% had undrained acute suppurative otitis media (Acute otitis media collected), 34.12% of patients had acute congestive otitis media and 30.59% (26 cases) had drained purulent otitis media. These results are different from those of Clavelin-truchon [38] in 2015 in France which had obtained acute otitis media with congestive eardrum 24% and acute otitis media with eardrum collected 36%.

Therapeutic data

Bourrous et al [36] in Morocco had used Amoxicillin + clavulanic acid in 70.3% of patients; Amoxicillin in 14.2%; 3rd generation cephalosporins in 7.7%; paracetamol in 77.4% of cases; ear drops in 30.3% of cases. But according to Afssaps source 2011, Amoxicillin is the first-line treatment for acute otitis media in children [2,4,10,12,41,42,43].

Treatment was mainly based on the antibiotic depending on the clinical stage observed. In our sample 95.29% (81cases) of patients received antibiotic therapy. Amoxicillin + clavulanic acid was administered as a 60% first-line line, followed by 17.6% amoxicillin. The use of analgesics was made in 85% of cases, ear drops in 65.88%.

We noted 5 cases of complications such as acute mastoiditis (5.9%). Asse [44] in Côte d'Ivoire reported one case of mastoiditis out of a total of 35 patients with acute otitis media. The literature reports other complications such as peripheral facial paralysis, labyrinthitis, meningitis, brain abscess [3,4,10,45,46].

V. Conclusion

This study allowed us to study the therapeutic principles of acute otitis media in children from 0 to 15 years in our department. A male predominance was observed, with mostly unilateral middle ear involvement. The symptomatology of acute otitis media was dominated by earache and otorrhoea. Undrained suppurative otitis media (Acute otitis media collected), has mainly been found. The majority of children received medical treatment with antibiotics especially (amoxicillin + clavunalic acid) followed by analgesics and anti-inflammatories. Local treatment with ear drops (antibiotics or analgesics) depending on the stages of otitis media has been prescribed in more than half of the patients. A favourable outcome was noted in most patients. Mastoiditis was the only complication found. No patients were lost to follow-up during the study.

VI. Recommendations

To the Minister of Health

- Strengthen the technical platform to facilitate access to quality care. Ensure the continuous training of health workers of the specialty to improve diagnostic and therapeutic conditions.

To the Chief Medical Officer of District IV Hospital

- Identify a policy to reduce the costs of treating acute otitis media
- Ensure the continuous training of ENT staff in the management of acute otitis media.

To health workers

- Know how to identify the call signs of acute otitis media
- Recognize acute otitis media as an acute disease with potential complications
- Organize multidisciplinary care
- Antibiotic therapy must not be abusive, it must be judicious and its indications very precise.

To parents

- Bring children to consultation as soon as signs of otologic calls appear.
- Know how to wash children's nasal cavities.
- Understand how to blow children's nose.
- Avoid colds
- Avoid water in the ear.

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