



Care for Acute Otitis Media in Children by General Practitioners in North Benin in 2017

Marius Claude Flatin^{1,2,*}, Spéro Herménégilde Raoul Hounkpatin^{1,2}, Cossi Angelo Attinsounon^{1,2}, Abdou Zulkif Toungou¹, Fatiou Alabi Bouraima², Alexis do Santos Zounon³, François Avakoudjo³, Wassi Adjibabi³

¹Faculty of Medicine, University of Parakou, Parakou, Benin

²Regional and Teaching Hospital of Borgou, Parakou, Benin

³Faculty of Medicine, University of Abomey Calavi, Cotonou, Benin

Email address:

flatmar03@yahoo.fr (M. C. Flatin)

*Corresponding author

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Abstract: Introduction: Acute otitis media (AOM) is a common childhood infection, subject to a wrongful prescription of antibiotics. The objective of this work was to evaluate the practices of general practitioners of North-Benin, in term of caring AOM in children. Methods: This was a cross-sectional, descriptive survey based on a telephone interview questionnaire with 112 general practitioners working in North Benin in 2017. The collected data were analyzed using EpiData Analysis and Open Epi software. The Khi2 test was used for comparisons. The significance threshold adopted was 0.05. Results: Of the 145 general practitioners listed, 112 participated in the survey for a participation rate of 77.2%. The mean age was 32 ± 6 years with a sex ratio of 4.04 and the median duration of seniority in the medical practice was 4 years with extremes of 1 and 32 years. Three main clinical signs suggestive of the diagnosis were, according to the respondents, otalgia (107; 95.5%), otorrhea (86; 76.8%) and fever (77; 68.8%). Tympanum inflammation and middle ear effusion association was considered as a diagnostic criterium by 17.9% of doctors. Therapeutic recommendations were known by 15 doctors (13.4%). Systematic antibiotic therapy was advocated by 86 doctors (76.8%). The main reasons for systematic antibiotics were the frequent use of antibiotics by parents in the self-medication (63 cases or 74.4%), the difficulty of following up the child (55 cases or 64 per cent) and the fear of the locoregional or systemic spread of infection (40 cases or 46.5%). The amoxicillin-clavulanic acid combination was prescribed as first-line by 68 respondents (62.4%). Forty doctors (36.7%) prescribed third-generation cephalosporins as second-line therapy. Systemic rhinopharyngeal disinfection was performed by 23 doctors (20.5%). In case of therapeutic failure, the opinion of an ENT doctor was requested by 66 general practitioners or 58.9% of the cases. Conclusion: It is necessary that Beninese medical companies develop national recommendations for managing the acute otitis media and ensure their diffusion through continuous medical training.

Keywords: Acute Otitis Media, Antibiotic Therapy, General Practitioners, North Benin

1. Introduction

The acute otitis media (AOM) is one of the most common pediatric disorders. Especially common in children, it is observed in more than two thirds of children under 3 years old [1]. In Benin, AOM accounted for 10.4% of consultations in ENT of the Teaching Hospital of Parakou in Borgou district (CHUD-B) in 2008, [2]. Children aged 0-5 years

accounted for 40% of patients with this disease according to *Hounkpatin and al.* [2]. The AOM is the consequence of a frequent adaptation disease at this age (rhinopharyngitis), realizing an inflammation of the rhinopharynx which will spread to the tympanic cavity via the auditory tube whose anatomical particularities in toddlers /the all - small promote the occurrence of the disease [1].

This is a frequent reason for consultation in outpatient

general medicine [3]. The treatment is based on systematic rhinopharyngeal disinfection with or without antibiotic therapy as appropriate. This restriction of the use of antibiotics recommended by several learned societies is justified on the one hand by the fact that many cases heal spontaneously and on the other hand, the increasing bacterial resistance, consequence of a diagnosis of excess [4]. In order to ensure a more rational use of antibiotics, many recommendations and therapeutic proposals have emerged and are constantly updated [5-9].

Evaluation studies of best practices in terms of AOM have been conducted worldwide [10-14], but there is almost no data in sub-Saharan Africa, particularly in Benin. This is what justifies this study whose purpose was to evaluate the practices of general practitioners of North Benin, in terms of managing the AMO in children.

2. Materials and Methods

2.1. Type of Study and Study Period

It is a cross-sectional and descriptive investigation carried out over a period of three months, from 1st April to June 31, 2017.

2.2. Study Population

The study focused on general practitioners practicing in the public, private and faith-based health structures of the four departments of North Benin: Atacora, Donga, Borgou, Alibori.

2.3. Inclusion Criteria

Included in the study were all general practitioners who gave their oral consent for the telephone interview as part of the study.

2.4. No inclusion Criteria

The four general practitioners who participated in the pre-survey and the 24 general practitioners who did not receive children in consultation were not included in the study.

2.5. Exclusion Criteria

Four general practitioners remained unavailable after five scheduled telephone calls were excluded from the study, as well as a doctor who refused to answer the questionnaire.

2.6. Sampling Technique

Recruitment has been systematic and exhaustive. A total of 145 general practitioners were listed on the basis of the registers available in the human resources services of the four departmental directions of health concerned. On the 145 general practitioners, four participated in the pre-survey, four others were not available, one doctor did not give consent and 24 did not care for children. The survey covered the remaining 112 general practitioners.

2.7. Data Collection

The data collection involved 112 general practitioners.

During the investigation, a first call was made, during which the practitioner was asked to participate in the telephone investigation of an approximate duration of 10 minutes and which subject was not notified. In the case of a favorable response of the doctor, the survey was conducted immediately or later, according to his convenience. The anonymity of the questionnaire was clarified to each doctor. This questionnaire consisted of eight open questions to let the respondent freely approach the topics that seemed important to him. The responses have been faithfully transcribed on paper during the telephone interview. A check was then made at the end of the interview from the voice recording in order to limit the means of hearing. This record was immediately deleted to ensure confidentiality. No comment on the answers given was made by the interviewer during the interviews.

2.8. Assessment Criterion

The assessment criterion were established, basing on the recommendations of the French Drug Agency (FDA) 2011, the High Health Authority (HHA) 2017 and the National Institute of Excellence in health and social services (INESSS) 2016: *a) the knowledge of diagnostic elements of a congestive, collected and perforated AOM; b) respect for the phase of clinical observation by practitioners, in children over 2 years of age whose symptoms are not severe. The clinical observation phase was defined by the initial abstention of antibiotic prescription and the systematic re-evaluation of the child in 48-72 hours; c) the clinical observation phase was defined by the initial abstention of antibiotic prescription and the systematic re-evaluation of the child in 48-72 hours; d) the prescription of a first-line recommended oral antibiotic in a child of under 2 years; e) the choice of a suitable dosage for the prescribed antibiotic, whatever the age; f) an antibiotic prescription duration of 5 days in children over 2 years and 8 to 10 days in children under 2 years; g) the systematic prescription of rhinopharyngeal disinfection; h) the decision to use the ENT in case of clinical failure of antibiotic therapy at 48 hours of progression of AOM, complications and difficulties in examining the child; i) the choice of a second-line recommended antibiotic (case of beta-lactam allergy) in children with the indication of oral antibiotic therapy.* [6, 8, 9]

2.9. Statistical Analysis

Double data entry was performed using the EpiData version 3.1 software. Data treatment and analysis was done using EpiData Analysis software version 2.2.3.187 and Open Epi software. Quantitative variables were expressed in average and median and the qualitative variables in percentage. The proportions were compared using the χ^2 test or Fisher's exact test. For the different associations, the significance threshold used was 0.05.

2.10. Ethical Considerations

The study got the approval of the Local Ethics Committee for the Biomedical Research of the University of Parakou (CLERB-UP) of Benin as well as the agreement of the administrative authorities of the four Health District Directions of Northern Benin. The interview took place only after obtaining the oral consent of the respondent. The information collected during this investigation was treated as confidential and anonymous.

3. Results

Among 145 listed doctors, 112 actually participated in the study, representing a participation rate of 77.2%. There were 90 men and 22 women, a sex ratio of 4.1. The mean age was 36 ± 6 years, and median seniority in medical practice was 32 years and 4 years with extremes of 1 and 32 years. Table 1 shows the socio-professional profile of respondents.

Table 1. Socio-professional profile of general practitioners in North-Benin in 2017 (n = 112).

		Numbers	(%)
Age	[25-35 [years	87	77.7
	[35-45 [years	22	19.6
	≥ 45 years	03	2.7
Sex	Male	90	80.4
	Female	22	19.6
Sector of activity	Public	46	41.1
	Private faith-based	30	26.8
	Private Liberal	32	30.4
	Mixed	02	1.8
Working area	Urban	62	55.4
	Peri-urban	38	33.9
Location of training	Rural	12	10.7
	FM - UP *	91	81.3
	FHS - UAC *	14	12.4
Post-graduate training	Foreign schools	07	6.3
	Continuing medical education	74	66.1
	Subscription to medical journals	24	21.4
	Training in infectious disease	13	11.6
	Additional training in Pediatrics	09	8.0
	Additional training in ENT	02	1.8

* Faculty of Medicine of the University of Parakou (Benin-North)

* Faculty of Health Sciences of the University of Abomey-Calavi (Benin-South)

From a diagnostic point of view, the general practitioners surveyed cited as main clinical signs suggestive of acute otitis media, otalgia (107 cases, 95.5%), otorrhea (86 cases, 76.8%) and fever (77 cases, 68.8%). The inflammatory aspect of the tympanum was mentioned by 90 doctors (80.4%) as otoscopic sign of AOM. The clinical pictures described by the respondents, were suggestive of congestive AOM in 57 cases (50.9%), collected AOM in 20 cases (17.9%) and perforated AOM in 23 cases (20.5%).

The realization of otoscopy, the main diagnosis mean of AOM, has been hampered by certain factors. It was the presence of earwax in 40 cases (35.7%), opposition of the child to the examination in 45 cases (40.2%) and the presence of otorrhea in four cases (3.6%). Of the respondents, 15 (13.4%) felt that otoscopic examination was not necessary. It should be noted that 45 respondents (40.2%) stated that they did not have any otoscopic examination equipment and they were mainly from the public sector.

Recent AOM therapeutic recommendations were known by 15 physicians, or 13.4% (Table 2). The prescription of antibiotic therapy was systematic for 86 respondents (76.8%). The reasons given by these 86 doctors were the frequent use of parents in the self-medication with antibiotics (63 cases or 74.4%), the difficulty of following up the child (55 cases or 64%) and the fear of complications (40 cases or 46.5%). For

23 respondents (20.5%), antibiotic therapy should be guided by clinical signs including high fever or otopyorrhea. Three doctors (2.7%) reported having ever prescribed antibiotic. As a first-line treatment, amoxicillin-clavulanic acid (ACA) was prescribed by 68 general practitioners (62.4%) and amoxicillin by 37 physicians (33.9%). Third-generation cephalosporins were more prescribed in the second line by 40 doctors (36.7%). Table 3 presents the antibiotics prescribed by general practitioners in first and second line for the treatment of AOM. Rhinopharyngeal disinfection was routinely prescribed by 23 physicians (20.5%). The main adjunctive therapy was paracetamol (90.2%). Failure of first-line therapy, 66 physicians (58.9%) were turned to an ENT doctor.

Table 2. Distribution of doctors surveyed in North Benin districts in 2017 according to their knowledge of FDA current recommendations and the terms of the antibiotic prescriptions (n = 112).

Prescription of antibiotics	Knowledge of current recommendations				Total
	Yes	%	No	%	
Systematic	10	11.6	76	88.4	86
Function of signs	05	21.7	18	78.3	23
Never	00	00.0	03	100.0	03
Total	15	13.4	97	86.6	112

Khi² = 2.076; p = 0.3541

Were excluded from this distribution general practitioners with zero pediatric activity (who do not receive children in consultation: n = 24).

Table 3. First and second-line antibiotics prescribed by general practitioners in North Benin for treating acute otitis media in children.

	Numbers	Frequency (%)
First-line antibiotics		
Amoxicillin	37	34.0
Clavulanic acid-amoxicillin	68	62.4
Macrolide	2	1.8
3 ^e generation cephalosporin	2	1.8
Total	109	100.0
Second-line antibiotics		
Amoxicillin	5	4.6
Clavulanic acid-amoxicillin	25	22.9
Macrolide	28	25.7
2 nd Generation cephalosporin	3	2.8
3 rd Generation cephalosporin	40	36.7
Fluoroquinolone	8	7.3
Total	109	100.0

4. Discussion

4.1. Knowledge of the AOM by General Practitioners

This study highlights a weak knowledge as well as a weak implementation of recommendations concerning the management of the AOM of the child by the general practitioners of North-Benin in 2017. Indeed, the diagnosis of an AOM is clinical. It is based on interview and otoscopy. Otolgia is the main symptom that leads parents to consultation [15]. In this study, otalgia was a meaningful sign for the majority of doctors (95.5%). This response rate was close to 89.7% reported by *Bourrous and al.* [10]. As for otorrhea, it was noted by practitioners in 76.8% of cases in this study and 58.1% of cases in that of *Ganga-Zandzou and al.* in France [12]. This higher rate would be the consequence of a late consultation often at the perforated stage of AOM in northern Benin.

From a diagnostic point of view, the redness of the tympanum is insufficient to make a diagnosis of collected AOM. Indeed, it is necessary to ensure a retro-tympanic effusion (bulging tympanum) to make this diagnosis according to several learned societies [6, 8, 9, 16]. For 68.7% of the respondents, this criterion was not mentioned. To make the diagnosis of AOM, general practitioners relied mainly on functional signs (67%), although suggestive, but without any specificity. *Legros and al.* [13] found a diagnosis by excess of AOM more important when the diagnosis is established on the basis of a redness (25% of cases) compared to the redness-bulging association (17% of cases).

4.2. Knowledge of the Recommendations of the Learned Societies and Prescriptions for Antibiotics

Therapeutically, the recommendations emphasize the non-systematic nature of antibiotic therapy. Some studies indicate that the majority of AOM cases heals spontaneously [1, 17].

In the present study, only 20.5% of general practitioners were not prescribers of antibiotics, in case of AOM. Their indications for antibiotic therapy were a high fever above 39° C (56.5%), the supposedly severe infection (47.8%) and otopyorrhea (39.1%). According to *Bourrous and al.*, apart

from fever, the absence of a favorable evolution after a few days and significant otalgia were the main indications of antibiotic therapy for Moroccan general practitioners [10]. According to current guidelines [6, 8, 9], probabilistic antibiotic therapy is recommended at once in children under 2 years of age [6]. This recommendation is observed by only 21.7% of general practitioners in this study. These recommendations also suggest a watchful waiting, observing a phase of 48 to 72 hours under symptomatic treatment in children over 2 years [6, 8, 9]. This wait-and-see method is the rule in some countries, such as Netherlands since 1990 [14], France since 2001 [5] and the USA since 2004 [18], but it is not widely applied in Africa in general and in Benin in particular. Only 22 general practitioners (19.6%) surveyed knew and observed this recommendation. Doctors in the private sector ($p = 0.0240$) and those subscribed to a medical journal ($p = 0.0069$) had better knowledge of the recommendations than those in the public sector. In a study conducted in 2008, in northern France, 46.5% of doctors had adopted this wait-and-see attitude [12].

4.3. Factors Influencing the Systematic Antibiotics Prescription

Several factors were highlighted by the surveyed doctors to explain their reluctance. The phenomenon of self-medication with antibiotics was incriminated by 70% of them. It represents the second cause of delay consultation according to a study by *Houunkpatin and al.* in a hospital in northern Benin [19]. The difficulty of following up the child remains a limiting factor. According to *Cassir and al.*, it was the leading cause (84%) of prescribing antibiotics off-recommendations in France in 2015 [11]. However, the condition of delayed prescription of antibiotic is in the insurance for the carer to see the child in control [20]. The pressure of the parents would influence the prescription of antibiotics. This was pointed out by 42.2% of doctors in this study. For *Cassir and al.*, prescribing antibiotics under pressure from parents was observed in 33% of cases [11]. These different factors tend to legitimize the systematic prescription of antibiotics, especially in a tropical country like Benin, where the environment is conducive to the proliferation of germs [21]. INESSS [8] and HAS [9] recommend in first-line amoxicillin-clavulanic acid (ACA) and third-generation cephalosporins (3GC) while the FDA [6] recommends amoxicillin. In first intention, the ACA remains the preferred molecule used by doctors in Northern Benin (62.4%). It was the same in the *Bourrous et al.*'s investigation (70.3%) [10]. As for the choice of the second-line antibiotic in this study, the preferred class was 3GC (36.7%). General practitioners in Morocco had similar trends in 2008 with 25.2% prescribing 3GC [10].

4.4. Practice of Rhinopharyngeal Disinfection (RPD) and ENT Doctors Appeal

Rhinopharyngeal disinfection was an unusual practice of the Beninese doctors surveyed. Indeed, it was prescribed by

only 20.5% of them. In the Moroccan study, 41.3% of doctors practiced RPD [10]. This poor practice of nasopharyngeal disinfection, suggests the omission by general practitioners of basic knowledge about the middle ear anatomy and the pathophysiology of AOM. With regard to the follow-up of the child, 99.1% of the doctors considered it necessary to review the child in control of which 29.7% opted for the 48 to 72 hours delay. In Morocco, however, 60.8% of doctors offered a follow-up appointment after 48 hours [10]. The attitude of the practitioners interviewed in case of therapeutic failure was dominated by the resort to ENT specialists (58.9%). It was the same with Moroccan general practitioners in 2009 (41.9%). There was 80% of resort to the specialist in the North of France in 2008 [12]. The insufficiency of ENT specialists in certain regions of Africa, like North Benin, could justify this disparity [19].

4.5. Strengths and Weaknesses of the Study

The telephone survey allowed, in a short period of time, to collect information from geographically dispersed practitioners in the four departments of North Benin. This method helped to quickly conduct the investigation efficiently and effectively. Moreover, acceptance or refusal to participate in the survey could be known to the investigator much more quickly than when sending postal or electronic questionnaire. This method also had the advantage of creating a physical distance between the interviewer and the interviewee, which reinforced the anonymity of the survey. The weaknesses of the study lay in the declarative nature of the information collected. Nevertheless, the method used made it possible to obtain results close to reality.

5. Conclusion

According to the survey, the recommendations for the management of acute otitis media were poorly known to general practitioners in northern Benin. It is therefore necessary that the Beninese medical companies draw up national recommendations for the management of acute otitis media and ensure their dissemination, through continuous medical training. This would help to improve the quality of AOM management in children on the one hand and avoid unnecessary or inappropriate prescriptions of antibiotics on the other hand.

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