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Original article

Profile of asthma in a pediatric setting at the paediatric department of the Ignace National Hospital in Conakry

Profil de l'asthme en milieu pédiatrique au service de pédiatrie de l'hôpital national Ignace de Conakry

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Résumé

Introduction : L'asthme est une maladie inflammatoire chronique, fréquent en pédiatrie, souvent sous diagnostiqué et peu documenté dans notre contexte. L'objectif était de contribuer à l'étude de la fréquence et les atopies associées de l'asthme chez les enfants de 3 à 15 ans au service de pédiatrie de l'hôpital national Ignace Deen.

Méthodologie : L'étude était observationnelle de six mois (1er Mai au 31 octobre 2019) au service de pédiatrie de l'hôpital national Ignace Deen, Conakry portant sur tous les enfants admis en consultation pour asthme.

Résultats : Sur 4225 enfants reçus nous avions enregistré 105 asthmatiques soit une fréquence hospitalière de (2, 48%), largement dominée par les jeunes enfants (3-6 ans) 51 cas (48,57%). L'âge moyen était 7, 51 ± 2,99 ans, avec un sex- ratio de 1,02 (masculin 53(50,50%)). Les symptômes évocateurs rapportés par les enfants ≤ 5 ans étaient la toux (100%) et la dyspnée (77,42%). La toux à (90,54%) et sensation d'oppression thoracique (58,11%) étaient également notifiées par les âges supérieurs à 5 ans. Les comorbidités atopiques personnelles étaient dominées par la rhinite allergique (63,80%). L'atopie familiale nucléaire notifiée était la rhinite allergique chez près de la moitié (48,57%) et l'asthme (28,57%) de cas. L'obésité était retrouvée chez (6,70%) des enfants. Les (58,10%) des cas n'étaient pas connus asthmatiques. Les autres (41,9%) étaient des anciens asthmatiques parmi lesquels (47,70%) n'étaient pas sous un traitement de fond. L'asthme intermittent était le plus fréquent chez les naïfs (52,44%) et (69,55%) d'enfants avaient un asthme contrôlé sous traitements de fond.

Conclusion : Il ressort de cette étude, une fréquence faible qui témoigne du sous diagnostic de l'affection dans notre contexte. Une étude analytique sur le sous diagnostic permettra d'identifier les facteurs associés.

Mots-clés : profil asthme, milieu pédiatrique, Ignace Deen, Conakry.

Abstract

Introduction: Asthma is a chronic inflammatory disease, common in pediatrics, often underdiagnosed and poorly documented in our context. The objective was to contribute to the study of the frequency and associated atopias of asthma in children aged 3 to 15 years in the paediatric department of the Ignace Deen National Hospital.

Methodology: The study was observational for six months (May 1 to October 31, 2019) in the pediatric department of the Ignace Deen National Hospital, Conakry covering all children admitted for asthma.

Results: Out of 4225 children received, we had recorded 105 asthmatics, i.e. a hospital frequency of (2.48%), largely dominated by young children (3-6 years), 51 cases (48.57%). The mean age was 7.51 ± 2.99 years, with a sex ratio of 1.02 (male 53(50.50%)). The suggestive symptoms reported by children ≤ 5 years were cough (100%) and dyspnoea (77.42%). Cough (90.54%) and chest tightness (58.11%) were also reported by ages over 5 years. Personal atopic comorbidities were dominated by allergic rhinitis (63.80%). Familial nuclear atopy reported was allergic rhinitis in nearly half (48.57%) and asthma (28.57%) of cases. Obesity was found in (6.70%) of children. The (58.10%) cases were not known to have asthmatics. The others (41.9%) were former asthmatics among whom (47.70%) were not on disease-modifying treatment. Intermittent asthma was most common in naïve children (52.44%) and (69.55%) of children had controlled asthma on disease-modifying treatments.

Conclusion: This study shows a low frequency that testifies to the underdiagnosis of the condition in our context. An analytical study on underdiagnosis will identify the associated factors.

Keywords: asthma profile, paediatric setting, Ignace Deen, Conakry.

Introduction

Asthma is a chronic inflammatory disease of the respiratory bronchi responsible for diffuse and variable obstruction [1]. It is the most common chronic pathology in children according to the WHO [2]. Asthma in children aged 5 and under has similarities, but also differences from asthma over the age of 5 [3]. The diagnosis is essentially clinical [3]. It poses a problem of underdiagnosis in paediatrics with 20 to 73% of children with asthma undiagnosed [4]. Atopy is a major characteristic in 68.1% of children [2]. Disease-modifying treatment combined with respect for environmental hygiene controls asthma in 63.2% of cases [5]. The prevalence varies according to the regions of the world, ranging from 1 to 18% [6]. We have very few studies on asthma in sub-Saharan Africa, unlike in the Maghreb [7]. In West Africa, the in-hospital frequency of asthma was 0.51% in Ouagadougou (Burkina Faso) and 2% in Dakar (Senegal) [5,8]. In Guinea, the prevalence of asthma and allergic conditions in schools in the commune of Matam (Conakry) was 8.9% in 2015[9]. It must be recognized that there is no study carried out on pediatric asthma in hospitals in Guinea to date. This lack of a study on this subject, coupled with the desire to shed light on the most common chronic pathology in pediatrics, motivated the choice of the present study, the objective of which was to contribute to the study of the frequency and atopias associated with asthma in children aged 3 to 15 years in Guinea. paediatric department of the Nation Ignace Deen hospital in Conakry.

Methodology

The paediatric department of the Ignace Deen National Hospital of the Conakry University Hospital served as a framework for us. The adult pneumo-phthisiology services, adult cardiology and adult medical emergencies, which are sometimes drop-off points for some asthmatic children, have collaborated by referring any child with asthma or suspected asthma

to our department during the study period. This was an observational study lasting 06 months (May 1 to October 31, 2019) which had involved a population of children aged 3 to 15 years. The diagnosis of asthma was retained by the presence of at least one suggestive symptom triggered or exacerbated at night, during a respiratory infection, physical exertion, exposure to an allergen or irritant. These suggestive symptoms were persistent or recurrent cough, dyspnea, recurrent wheezing, and reduced activity for children under 5 years of age. For children aged 5 years and older, in addition to the first three symptoms mentioned above, the reduction in activity is replaced by the feeling of chest tightness. Data were collected using a questionnaire containing sociodemographic (age, sex, residence) and clinical data (suggestive symptoms, history of personal atopia, history of atopia of the nuclear family, corpulence, known children with or without asthma, whether or not they were subject to background treatment, the level of severity of the disease and the level of asthma control). Body size was defined from the interpretation of BMI (body mass index) and distributed as follows: normal, lean, overweight and obese.

-**The level of severity** of the disease had concerned naïve asthmatic children (asthmatic children not subjected to a disease-modifying treatment). It is evaluated on the basis of the clinical criteria: the table below

Asthma	Daytime symptoms	Symptoms nocturnal	Impact On activity	Using B2CA
Intermittent	< 1 week	< 2 months	Nobody	Rare
Mild persistent	>1 week < 1 day	>2 months	Moderate on activities and sleep	Occasional
Moderate Persistent	Daily	>1 only	Important on activities and sleep	Daily
Severe persistent	Permanent	Frequent	Limited physical activity, disturbed sum	Daily

NB: Only one is enough to classify the child.

-The assessment of the level of asthma control concerned asthmatic children previously subjected to disease-modifying treatment. It is evaluated on the basis of a questionnaire on suggestive symptoms, quality of life and the need for the use of short-acting beta-2-mimetics (B2CA) according to GINA (Global Initiative for Asthma). An input mask was developed and the statistical analysis carried out by the EPI data version 4.6 software.

Results

During our study period, 105 asthmatic children were registered out of a total of 4225 children who consulted the department achieving a hospital frequency of 2.48%. The mean age was 7.51 ± 2.99 with age extremes of 3 and 14 years. Small children were the most affected, 51 children (48.57%) with a male predominance (sex ratio of 1.02). Our children mainly resided in the city of Conakry, particularly in the communes of Matoto 24 children (22.84%), Kaloum 22 (20.95%) and Ratoma 22 (20.95%). Table I illustrates the sociodemographic characteristics of our asthmatic children.

Average age: 7.51 ± 2.99 years with extremes: 3 and 14 years; Boy/Girl sex ratio = 1.02.

The most reported suggestive symptoms ≤ children aged 5 were cough (100%) and dyspnoea (77.42%). Cough (90.54%) and dyspnoea (72.97%) were also reported by ages greater than 5 years (Table II).

Personal atopic comorbidities were dominated by allergic rhinitis 67 cases (63.80%), followed by

allergic conjunctivitis 32 (30.48%) and food allergy 15 (14.29%) (Table III).

Familial nuclear atopy reported was allergic rhinitis in nearly half (48.57%) of the cases, allergic conjunctivitis 31 (29.52%) and asthma 30 (28.57%) (Table IV).

In terms of body mass: 81 cases (77.1%) of the asthmatic children had normal build, 10 (9.5%) were overweight, 7 (6.7%) were thin and 7 (6.7%) were obese. The 61 cases (58.10%) were not known to have asthma. The remaining 44 cases (41.90%) were former asthmatics, of whom 21 (47.70%) were not on disease-modifying therapy. Depending on the level of severity of asthmatic disease, in the 82 naïve asthmatic children asthma was intermittent in 43 cases (52.44%), mild persistence 32 (39.02%), moderate persistence 4 (4.88%) and severe persistence 3 (3.66%).

Table I: Distribution of asthmatic children according to sociodemographic data in the paediatric department.

Demographic		Workforce (n=105)	Percentages (%)
Age	Small children [3-6 years [	51	48,57
	Older children [7-11 years old [	41	39,05
	Adolescents [12-15 years]	13	12,38
Sex	Masculine	53	50,50
	Feminine	52	49,50
Residence	Kaloum	22	20,95
	Dixinn	9	8,57
	Matam	12	11,43
	Matoto	24	22,86
	Ratoma	22	20,95
	Outside Conakry	16	15,14

Table II: Distribution of the 105 asthmatic children according to age and suggestive symptoms in the paediatric department of the HNID.

Age	Actual	Recurring/Persistent Cough	Dyspnoea	Recurrent Wheezing	Reduced activity	Feeling tightness in the chest
≤ 5 years	31	31(100%)	24(77,42%)	19(61,29%)	1(3,23%)	
> 5 years	74	67(90,54%)	54(72,97%)	44(59,46%)		43 (58,11%)

Table III: Distribution of asthmatic children according to personal history of atopy in the paediatric department of the HNID.

History of atopy	Workforce (n=105)	Percentages
Allergic rhinitis	67	63,80
Allergic conjunctivitis	32	30,48
Food allergies	15	14,29
Dermatitis/Atopic Eczema	1	0,95

Table IV: Distribution of asthmatic children according to the history of atopy of the nuclear family in the paediatric department of the HNID.

History of atopy in the nuclear family	Workforce (N= 105)	Percentage
Allergic rhinitis	51	48,57
Allergic conjunctivitis	31	29,52
Asthma	30	28,57
Dermatitis/Atopic Eczema	1	0,95

Table V: Distribution of the 23 asthmatic children on disease-modifying treatments according to the level of asthma control in the paediatric department of the HNID.

Level of control Asthma	Number of children ≤ 5 years)	Number of children > 5 years)	Total
Controlled	6(85.71%)	10(62,50%)	16(69,57%)
Partially Controlled	1(14.29%)	6(37,5%)	7(30,43%)
Total	7(100%)	16(100%)	23(100%)

Discussion

The limitations of the present study were the impossibility of establishing cause-and-effect relationships between variables, of following the evolution of patients and of memory bias during interrogation.

We had a hospital frequency of 2.48% thanks to a review before the start of the present study among the nursing staff of our department on the diagnosis of childhood asthma according to GINA recommendations. The departments, in particular adult pneumo-phthisiology, adult cardiology and adult medical emergencies, which are sometimes drop-off points for some asthmatic children, had collaborated by referring any child with asthma or suspected asthma to our department. However, this frequency is low and reflects the underdiagnosis of asthma in our context. In the absence of baseline data, it should be noted that it is only symptomatic cases who consult. This result was close to those of Ba M et al. [8] in Dakar (Senegal) and Moyen E et al. [10] in Brazzaville (Congo) which reported frequencies of 2% and 3.5%, respectively. It was higher than that of Ouedraogo S O et al. [5], which had recorded a hospital frequency of 0.51%. This difference can be explained on the one hand by the diagnostic criteria used and, on the other hand, by the installation of several industrial units in Conakry. The diagnosis of childhood asthma in our context could be improved by providing the country with a national paediatric asthma management guide (or national consensus), and by ensuring continuous training of medical staff by public authorities. Among this composite paediatric population in the study, small children were the most affected. These data were similar to those of El Mahdi Boub Kraoui M and Coll [11] in Morocco who had observed that asthmatic children aged 2 to 5 years accounted for 51%. This could be argued by the susceptibility to respiratory infections in this age group, the promiscuity and the lack of respiratory hygiene that favor the transmission of respiratory infections responsible for asthma exacerbations motivating consultations. The average age coincides with the beginning of infancy. It is comparable to that of Benhayoun F et al. [12], who found an average age of 7.3 years. The male sex was slightly predominant. This was the case of Moyen E et al. [10], in Brazzaville (Congo), which had a male predominance of 59.2%. The current state of knowledge on childhood asthma notes a male predominance before puberty and then a reversal of the trend [12]. The majority of asthmatic children came from Conakry (Matoto, Ratoma and Kaloum). This would be justified by the fact that the commune of Kaloum is home to Ignace Deen's pediatrics, pulmonology and cardiology department. The other two (Matoto and Ratoma) are the headquarters of many industries with a polluted and very dusty environment. A well-conducted interview with a careful analysis of the symptoms suggestive of asthma most often leads to the diagnosis of asthma in children. Among these suggestive symptoms, cough was the most common followed by dyspnea. Ouedraogo S.O et al., also found that cough was the most frequent prodrome 70.9% [5]. Moyenne E et al, had confirmed this predominance of cough as an suggestive symptom in 81.5% of cases [10]. Cough is the most observed and reported symptom; but is not representative of asthma unless it is triggered/ aggravated at night, during a respiratory infection, exertion, exposure to an allergen or pollutant [13]. The diagnosis of asthma is automatically followed by the diagnosis of certain comorbidities that negatively affect asthma. In our series, asthma was often associated with atopic comorbidities. Among them, allergic rhinitis was the most common history of personal atopy, followed by allergic conjunctivitis. These results may be biased because they are based on the statements of the parents and/or the child, but several authors [11; 14; 15; 16 and 17] had made the same observation that allergic rhinitis was the most common personal atopy followed by allergic conjunctivitis. The history of nuclear family atopy in our work was dominated by allergic rhinitis, allergic conjunctivitis, and asthma. On the other hand, El Mahdi Boubkraoui M [11], in Rabat, reported a history

of familial atopy of asthma of 43%. The frequencies of the various atopic diseases in the present study sufficiently show that asthma is an atopic disease with a significant hereditary character. Obesity is a risk factor but also a factor in poor asthma control [18]. The corpulence study in our study had reported a lower frequency than that of Damas MC in France which, in a national health survey, had reported that 16.8% of asthmatic children were obese [19]. The Western lifestyle, dominated by overeating coupled with a sedentary lifestyle that promotes obesity, would explain this difference. Underdiagnosis is a recurring problem in chronic diseases. The majority of the children were unaware that they had asthma despite numerous consultations for the symptoms suggestive of some of them. This result was higher than those of Walus I [20], in Paris, who had observed in secondary schools that 11.5% of asthmatic children were not diagnosed, and of Depner M, who in a European cohort study had observed that 12% of asthmatic children were not diagnosed at the age of 6 years [21]. The level of accessible and efficient health care in Europe would explain this low figure. On the other hand, our result was similar to that of Aaron SD et al, in 2018 in the USA, who reported that 20 to 73% of asthmatic children were undiagnosed [4]. These high data from children not known to have asthma at the time of the study could be explained by the lack of knowledge of atypical forms of asthma by the doctors in charge of children, the possibility of access to a pediatrician as well as the underestimation by parents of suggestive symptoms. Any chronic disease requires long-term treatment, but in reality many patients are not subjected to disease-modifying treatments for various reasons. Our result was close to that of Julian V et al. [2] in 2014 in Clermont Ferrand (France) who found that 51.2% of asthmatic children were not subjected to a disease-modifying treatment. Denial of diagnosis, poverty and the unavailability of access to medication in some places, particularly in the prefectures, would explain this high percentage of asthmatic children not on disease-modifying treatments in our context. The assessment of severity in children with asthma is an essential step before starting a long-term treatment regimen. In our series, intermittent asthma was the most common. This result is lower than those of Ouédraogo SO [5] and Wurmser C [17], who had observed that intermittent asthma was the most common form at 62.2% and 65% respectively. This difference could be explained by the clinical criteria used but also by the bias of the interview. The notion of asthma control is decisive in the follow-up of a child with asthma undergoing disease-modifying treatment. It is predictive of the fate of one's respiratory capital and makes it possible to decide on the appropriate therapeutic level [3]. Asthma was controlled in the majority of children. These data were comparable to those of Ouédraogo SO [5], who had observed that 63.2% of children had controlled asthma. Good compliance with treatment, respect for environmental hygiene and management of comorbidities would argue in favour of the high rate of control in our children on disease-modifying treatments.

Conclusion

A rigorous diagnostic approach allows access to the diagnosis of asthma in pediatrics, but despite this, this study highlights a diagnostic gap evidenced by a low hospital frequency in our context. The atopic imprint is deeply marked in these asthmatic children. It should also be noted that many children known to have asthma were not subjected to a background treatment for reasons that remain to be explored. An analytical study on the problem of underdiagnosis and management of childhood asthma will identify the associated factors.

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Conflict of interest : None

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