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Research Article

Acute Respiratory Distress in Children: Epidemiological Profile, Diagnosis and Evolution at the Dakar Hospital

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ABSTRACT

Respiratory distress in children is one of the most frequently encountered emergencies in paediatric emergency departments. It is responsible for high morbidity and mortality. The objective of our study was to determine the epidemiological, clinical, therapeutic and evolutionary aspects of acute respiratory distress in children hospitalized in the paediatric ward of the Grand Yoff general hospital in Dakar. We carried out a retrospective descriptive study over a period of 2 years from 01 January 2020 to 31 December 2021. All children aged between 1 month and 15 years hospitalized in the paediatric department during the study period and presenting with respiratory difficulties, whatever the severity and cause, were included. The hospital prevalence was 17.32%; the mean age was 42.67 months. Dyspnea, fever and cough accounted for 60.39%, 50.65% and 50.00% of the reasons for hospitalization respectively. On physical examination, bronchial obstruction syndrome was found in 53.90%. In terms of aetiology, pulmonary causes accounted for 66.88%. The evolution was favourable in 89.61%. We found 7.79% of deaths among the patients.

Keywords: Respiratory distress; Child; Dyspnea; Mortality

INTRODUCTION

Respiratory distress in children is one of the most frequently encountered emergencies in paediatric emergency departments [1]. It is responsible for high morbidity and mortality. Mortality associated with acute respiratory distress in the intensive care has decreased from 72% in 1992 to 1.6% in 2003 [2].

The prognosis depends on the speed and quality of management, but also on the terrain. It is important to recognize the mechanism, topography and cause by rapid methodical analysis, to assess the severity of the condition, to start treatment without delay and to monitor its efficacy, as delay in management and lack of adequate treatment can lead to acute respiratory failure or cardiorespiratory arrest.

Worldwide, the incidence of respiratory distress in the O. Flechelles study was: 83% in Canada, France 73%, Turkey 80%, and Argentina 56%; in D. Toulorge's study at the University of Paris, respiratory distress represents 1.2 cases out of 160 cases. In Gabon, respiratory distress accounts for 6% of paediatric emergency cases [3]. In Morocco, out of 3,537 patients referred for hospitalization to the paediatric pneumo-allergology and infectiology department, 2,493 (70.5%) were referred for respiratory pathology [4]. According to ANSD data, pneumonia, which is one of the main causes of respiratory distress, is the leading cause of mortality in children under five. Diop [5] in his study on lower respiratory infections carried out at the Pikine National Hospital Center found a hospital frequency of 10.44%. Despite this, we found no study on respiratory diseases in children, and even less on respiratory distress at the Grand Yoff Hospital. We conducted this study with the main objective of identifying the main causes of respiratory distress in children and determining the epidemiological, clinical, therapeutic and evolutionary aspects of children hospitalized for acute respiratory distress at the Grand Yoff Hospital in Dakar.

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METHODOLOGY

We conducted a retrospective descriptive study over a 2-years period from January 1, 2020 to December 31, 2021.

All children aged between 1 month and 15 years hospitalized in the pediatric ward during the study period and presenting with respiratory difficulties, regardless of severity and cause, were included.

The data were collected using a survey form designed for this purpose and filled in from the hospitalization records. Data from the Medical Information Service (SIM) were also used.

The data were entered into Excel 2010 after designing a data entry mask. The analysis was carried out with the following software: Excel 2010 and Epi info 7.2.

RESULTS

During the study period, 889 patients were hospitalized. The hospital prevalence was 17.32%.

The months of September, October and November recorded 10.39%, 14.29% and 10.39% respectively as shown in the following Figure 1.

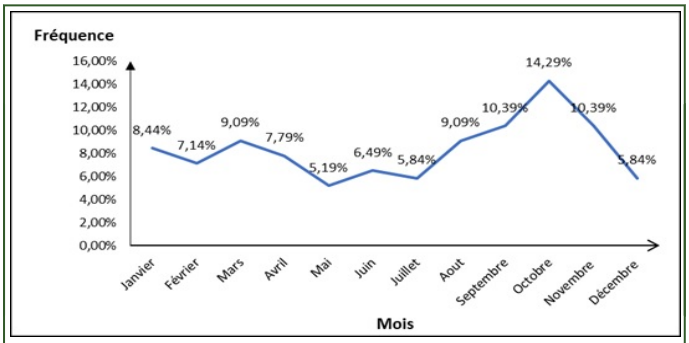

Figure 1: Distribution of patients by month of admission N=154.

The mean age of the patients was 42.67 months. The extremes were 1.00 months and 180.00 months. The median age was 24.00 months. The mode was 24.00 months.

The sex ratio of boys to girls was 1.30.

On questioning, a family history of asthma was found in 33.77% (n=52). The following Table 1 shows the distribution of patients according to their family and personal history.

History	Number	Frequency
	N	%
Family history		
Asthma	52	33,77
Sickle cell disease	4	2,60
Heart disease	1	0,65
other	3	1,95
No family history	94	61,01
Personal history		
Bronchiolitis	26	16,88
Prematurity	1	0,65
Heart disease	1	0,65
other	11	7,14
No personal history	115	74.67

Table 1: Distribution of patients according to their family and personal history.

Dyspnea, fever and cough represented 60.39%, 50.65% and 50.00% of the reasons for hospitalization respectively.

On physical examination, bronchial obstruction syndrome was found in 53.90%. The following Figure 2 shows the distribution of patients according to the respiratory syndromes found.

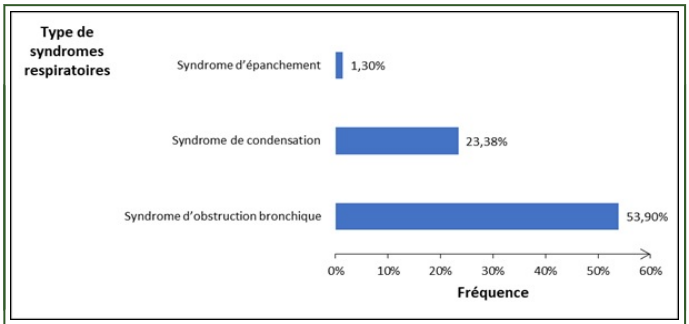

Figure 2: Distribution of patients according to type of respiratory syndromes.

In terms of etiology, pulmonary causes accounted for 66.88% (n=103) as shown in the following Figure 3.

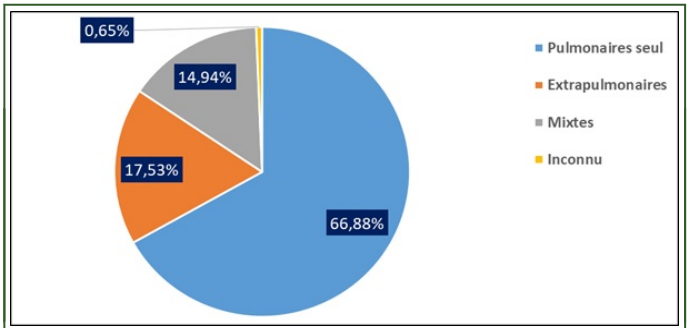

Figure 3: Distribution of patients by type of cause N=154. **Note:** ( ) Pulmonaires Seul, ( ) Extrapulmonaires, ( ) Mixtes, ( ) Inconnu.

In terms of treatment, hydration and oxygen therapy were administered in 95.45% and 74.75% of patients respectively. Antibiotic therapy was administered in 92.11% of patients. The evolution was favourable in 89.61%. We found 7.79% of patients to be dead. The following Figure 4 shows the distribution of patients according to the mode of evolution.

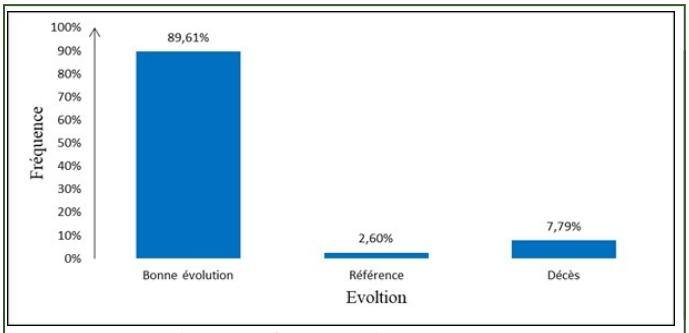

Figure 4: Distribution of patients by outcome N=154.

DISCUSSION

The prevalence of respiratory distress was 17.3% in our study. Diop [5] found a frequency of 10.44%. The increase in our frequency could be explained by the fact that in our study all causes can be observed whereas DIOP treated only infectious causes.

The most frequent hospitalizations for acute respiratory distress were in August, September, October, and November with respectively 9.09%; 10.39% and 14.29% and 10.39%. Our results are relatively comparable to those of Cissoko [6] with a rate of 22.4% and Maiga [7] where the majority of cases of respiratory distress were recorded in the last quarter of the year with a peak in December, i.e. 111 cases (16.37%). These results could be explained in part by climate change. They can also be explained by the fact that these months are relatively cold or humid and therefore predispose to viral respiratory diseases which lead to a weakening of the respiratory epithelium, which provides a breeding ground for bacterial infections. The average age of the patients was 42.67 months, with 46.75% of the patients under 24 months of age. These results are comparable to those found by Kouyate [8] and Maiga [7] in Mali. The high frequency of respiratory distress in this age group would be linked on the one hand to the immaturity of their immune system and on the other hand to the particular anatomical configuration of the bronchial respiratory tree. The results show that dyspnoea was the main reason for consultation with more than 60% of the children, alongside fever and cough with respectively 50.65% and 50%.

Kouyate [8] found that these three reasons for consultation were the most frequent with 36.9% for dyspnoea and 36.0% and 14.0% respectively for cough and fever. This can be explained by the fact that more than 40% of the patients came from the suburbs with a low socio-economic level resulting in a delay in consultation allowing the installation of respiratory distress. The study showed us that bronchial obstruction and condensation syndromes were the most frequently found with 53.90% and 23.38% respectively. These figures are quite different from those obtained by Diop [5] who found a predominance of the condensation syndrome with 58.25%, followed by the bronchial obstruction syndrome with 44%. Thiongane [9] in 2009 found 76.6% of pulmonary condensation and 25.8% of liquid effusion syndrome while Sow [10] found 68.56% of pulmonary condensation and 35.92% of liquid effusion. This may be explained by the fact that the latter studies cited dealt only with bacterial causes.

In our study, pulmonary causes were in the majority with more than six out of ten causes. In his work Kouyate [8] found a frequency of more than 70.00% of pulmonary causes, while Sougou found a percentage of 56%. Among the pulmonary causes, bronchiolitis was the most frequent with 31.20% of causes, followed by pneumonia with 23.20% and asthma exacerbation. While Diop [5,11] found a predominance of pneumonia and bronchopneumonia followed by acute bronchiolitis. Elsewhere, in Brazil, Oliveira et al. [12] also reported the same predominance of bronchopneumonia (82%) followed by bronchiolitis (10%). However, overall in Africa, pneumonia seemed to predominate in the oldest studies [13,14]. However, there is a trend towards a predominance of bronchiolitis in the most recent studies [15]. This predominance of bronchiolitis in our study can be explained by the predominance of children less than two years of age who have more bronchiolitis, but also by the absence of vaccination against viruses, as opposed to bacteria, for which vaccines are available, notably in the framework of the Expanded Programme on Immunization (EPI). In terms of treatment, oxygen therapy was prescribed in 74.03% of patients. The high rate of oxygenation in our study could be related to the predominance of bronchiolitis among the causes but also to comfort oxygenation which is administered each time the child presents severe respiratory distress even if the child did not present hypoxaemia. Antibiotic therapy was administered in more than 90% of our patients. Elsewhere Kouyate [8] found 71%; Maiga [7] 84.94%. This very high percentage can be explained by the fact that bacterial infectious causes remain predominant in our contexts. In our study, 89.61% of children had a good clinical course. However, 12 patients (7.79%) died. Ly et al. [15] found a mortality rate of 3% which was comparable to the rates found in 2009 by Thiongane et al. [9] and Sow et al. [10] respectively of 3.1% and 2.9%. In Mali, Maiga [7,10] found a mortality rate of 20.65%.

CONCLUSION

Our relatively high mortality rate could be explained by the fact that the paediatric department where the study was carried out does not have an adequate technical platform for the efficient management of these cases of respiratory distress.

Respiratory distress remains a frequent cause of consultation in paediatric emergencies. The aetiologies remain numerous and varied. Its management requires a rigorous approach and an adequate technical platform.

CONFLICTS OF INTEREST

None

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