

Original Research Article

Respiratory Distress in Children Aged 6 to 59 Months at the Pediatric Department of the Csref of Commune V of Bamako: Clinical and Therapeutic Aspects

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Abstract: Introduction: Respiratory distress in children is a frequent emergency in daily practice. The aim was to describe the clinical and therapeutic characteristics of respiratory distress in young children aged 6 to 59 months admitted to the paediatric emergency department of CSREF CV. **Methods:** This was a prospective cross-sectional study conducted over a 12-month period from 01 August 2022 to 31 July 2023. Data were collected using an individual survey form. SPPSS 23.0 software was used for data entry and analysis. **Results:** During the study period, 881 hospital admissions were recorded, including 82 cases of respiratory distress, i.e. a frequency of 9.31%. Females were more prevalent (57.3%). The most common age group was 6-12 months (46.34%). The month with the highest number of admissions was September (15.85%). Dyspnoea was the most common reason for consultation (31.06%) and hospitalisation (68.29%). Intercostal indrawing was the most common sign of respiratory difficulty (49.02%). Pneumonia was the most common pulmonary cause (54.88%). The majority of patients were hospitalised for 1 to 5 days (47.56%). Almost a third of patients received antibiotic treatment (27.80%). **Conclusion :** Early management of respiratory distress can reduce the length of hospital stay and improve vital prognosis.

Keywords: Respiratory Distress, Children, Paediatric Emergencies.

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1. INTRODUCTION

Respiratory distress in children is common in everyday paediatric practice. It is characterised by an increase in the work of breathing, with the accessory respiratory muscles coming into play in order to ensure normal arterial oxygenation [1]. The respiratory system is then no longer able to ensure normal gas exchanges of oxygen and carbon dioxide. This is a medical emergency that can be life-threatening. Its management requires a series of well-codified resuscitation measures, which unfortunately do not exist in most of our healthcare facilities [2, 3]. Delayed or inadequate treatment can lead to acute respiratory failure or cardiorespiratory arrest [4]. The sudden onset of profound hypoxaemia is clinically reflected by the appearance of respiratory signs (tachypnoea, hyperpnoea), skin signs (cyanosis), circulatory signs (tachycardia and rhythm disorders) and neuropsychological signs (agitation, coma, somnolence) [1]. Respiratory pathologies are a frequent reason for hospitalisation in paediatrics [5]. The most vulnerable

groups are premature babies, neonatal suffering and congenital malformations [6]. Respiratory distress is a major cause of morbidity and mortality in paediatrics [7].

Worldwide, the incidence of respiratory distress was 83% in Canada, 73% in France, 80% in Turkey and 56% in Argentina. In Guinea Conakry in 2017, respiratory distress accounted for 21.32% of hospital admissions [8]. In Mali, studies carried out at the Gabriel Touré University Hospital by Maïga B *et al.*, [9], and by Kouyaté M [10], in the paediatric department of the commune V referral health centre found respectively 30.25% and 1.12% of cases of respiratory distress.

Respiratory distress is a major emergency and requires appropriate care protocols and sufficient technical resources. The aim of the study was to describe the clinical and therapeutic characteristics of respiratory distress in young children aged between 6 and 59 months

hospitalised in the paediatric emergency department of CSREF CV.

2. PATIENTS AND METHOD

Our study took place in Bamako, Mali, in the paediatrics department of the commune V referral health centre. It was a prospective cross-sectional study conducted over a 12-month period from 01 August 2022 to 31 July 2023. All children aged 6 to 59 months hospitalised in the department during the study period for respiratory distress were included. Not included were children hospitalised without respiratory distress, children under 6 months and over 59 months hospitalised for respiratory distress. The variables measured were: presence of respiratory distress; respiratory frequency (polypnoea; bradypnoea; tachypnoea); sociodemographic data (age, sex, ethnicity, origin);

clinical data (signs of struggle, i.e. nasal flaring, intercostal tugging, thoracoabdominal rocking, xiphoid funneling and whining) and respiratory data (oxygen saturation). Data were collected using a specially designed individual survey form. SOPSS 23.0 software was used for data entry and analysis. Text and table processing was carried out using Word and Excel 2016. This study obtained verbal consent from the patients' parents under the guarantee of unconstrained anonymity.

3. RESULTS

During the 12 months of the study out of 881 hospitalisations, 82 cases met our inclusion criteria i.e. 9.31%. The most represented age group was 6-12 months with 46.34%. A predominance of females was observed in our series (57.3%). A high proportion of admissions was recorded in September (15.85%) (Table I).

Table I: Breakdown of children by month of admission

| Month of admission | Numbers | Percentage (%) |
|--------------------|-----------|----------------|
| January | 3 | 3,66 |
| February | 7 | 8,54 |
| March | 5 | 6,09 |
| April | 7 | 8,54 |
| May | 5 | 6,09 |
| June | 8 | 9,76 |
| July | 9 | 10,98 |
| August | 12 | 14,63 |
| September | 13 | 15,85 |
| October | 7 | 8,54 |
| November | 3 | 3,66 |
| December | 4 | 4,88 |
| Total | 82 | 100,0 |

Among family antecedents, asthma accounted for 41.18% of cases. Bronchiolitis was the most common personal history in our patients, accounting for 46.66% of cases. Respiratory distress was progressive in 95.10%

of cases. Dyspnoea was the most common reason for consultation and hospitalisation, accounting for 31.06% and 69.4% of cases respectively (Table II), followed by fever in 27.66% of cases.

Table II: Breakdown of children by reason for consultation

| Reason for consultation | Yes | Percentage (%) |
|----------------------------|------------|----------------|
| Fever | 65 | 27,66 |
| Shortness of breath | 73 | 31,06 |
| Cough | 44 | 18,72 |
| Rhinorrhea | 17 | 7,23 |
| Pallor | 5 | 2,13 |
| Convulsion | 7 | 2,98 |
| Anuria | 2 | 0,85 |
| Anorexia | 7 | 2,98 |
| Vomiting and diarrhoea | 15 | 6,38 |
| Total | 235 | 100 |

The majority of our patients (60.98%) had a saturation of less than 90%. Intercostal indrawing was the most common sign of respiratory distress (49.02%). Crackles were found on pulmonary auscultation in 54.35% of patients. Chest X-rays were taken in 58 patients (74.36%). Pneumonia was the most common pulmonary aetiology, accounting for 68.75% of cases.

The most common extra-pulmonary cause was severe anaemic malaria (27.77%). 25 % of patients received oxygen therapy. More than a third of patients received antibiotic treatment (32.67%). The average length of hospitalisation was 1 to 5 days (47.56 days). Cure was obtained in 58 patients (70.70% of cases). We recorded

19 cases of death (23.20%) and 5 patients (6.10%) were referred (Table III).

Table III: Breakdown of patients by outcome

| Immediate future | Numbers | Percentage (%) |
|------------------|-----------|----------------|
| Referral | 5 | 6,10 |
| Cured | 58 | 70,70 |
| Deceased | 19 | 23,20 |
| Total | 82 | 100,0 |

4. DISCUSSION

This prospective, cross-sectional study included 82 cases of respiratory distress, representing a frequency of 9.31%. This result is lower than those of Maïga B *et al.*, V Guittet *et al.*, and Camara E *et al.*, who found respectively 30.25%, 29% and 24.95% [9-12]. This difference is due to the size of the sample. Children in the 6 to 12 month age group were the most represented with 46.34% of cases. In the study by Maïga B *et al.*, [9], children under 1 year of age accounted for 64.8% of cases, and the study by Camara E *et al.*, [12], in Guinea in 2021 found 69.23%. The high frequency of respiratory distress in this age group is thought to be linked to the immaturity of their immune system (maturation of the immune system, high susceptibility to infection) and to the particular anatomical configuration of the bronchial respiratory tree.

In our series, a high rate of admission was recorded in September (15.85%). Our result differs from that of Maïga B *et al.*, [9], who found 16.37% in December. These results can be explained by climate change and by the fact that these months are relatively cold or humid and therefore predispose to respiratory diseases. The predominant sex was female, unlike the series by Maïga B *et al.*, [9], and Camara E *et al.*, [12], which found a predominance of males. Among family antecedents, asthma accounted for 41.18% of cases. Bronchiolitis was the most common personal history in our patients, accounting for 46.66%. Some authors have reported better results [13, 14].

Dyspnoea was the main reason for consultation and hospitalisation in 31.06% and 69.4% of cases respectively. Maïga B *et al.*, Camara E *et al.*, reported dyspnoea as the main physical sign in 96.22% and 100% of cases respectively [9-12].

This is due to the fact that lower respiratory infections generate bronchial secretions, which impede gas exchange at the alveolar level, resulting in dyspnoea. Intercostal indrawing was the sign of respiratory struggle most frequently found in our series (49.02%). This result is lower than those of Sawadogo S.A and MISHRA S who found 51.4% and 100% intercostal chest indrawing respectively in their studies [15, 16]. Crackles were found on pulmonary auscultation in 54.35% of cases. In the study by Maïga B *et al.*, crackles accounted for 47.64% of cases.

Chest radiography was performed in 58 patients (74.36%), with some authors reporting better results than us [9-15].

Pneumonia was the main aetiology found in our series (68.75%). Our rate was in line with that of Maïga B *et al.*, This explains why lung disease is the most common cause of respiratory distress in children under 5 years of age. The extra pulmonary cause was dominated by severe anaemic malaria in 27.77%. This result is higher than that of Maïga B *et al.*, (11.80%) but lower than that of Camara E *et al.*, (47.06%).

The genesis of respiratory distress during malaria is essentially explained by its complications, namely metabolic acidosis and acute lung oedema. 25.66% of our patients received oxygen therapy. Our result is lower than those of Camara E *et al.*, (91.54%) [12], and Hamza *et al.*, (100%) [17].

One third of patients (27.80%) received antibiotic treatment (n: 294). Our result is lower than those of Maïga B *et al.*, and Camara E *et al.*, with respectively 84.8% and 92.31% of antibiotic treatment [9-12].

The mean length of hospitalisation was 1 to 5 days (47.56%), which is less than that of Maïga B (less than 7 days in 63.42% of cases). On the other hand, Camara E *et al.*, found a hospital stay of more than 7 days in 36.93% of cases. Recovery was achieved in 58 patients, i.e. 70.70% of cases. The evolution of respiratory distress is favourable with appropriate treatment and early management.

We recorded 19 cases of death (23.20%) and 5 patients (6.10%) were referred. Our result is close to MAIGA B [9], with 20.65%.

5. CONCLUSION

Respiratory distress remains one of the most frequent reasons for hospitalisation in paediatric emergencies. Our study has enabled us to identify many causes. Early management reduces the length of hospitalisation and improves the vital prognosis.

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