

Epidemiological, Clinical and Prognostic Profiles of Measles in Children in the Pediatric Ward of the University Hospital of Conakry

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Abstract

Introduction: Measles is a highly contagious viral infectious disease. It is one of the major causes of infant morbidity and mortality in developing countries. The general objective was to study the epidemiological, clinical and prognostic aspects of measles in the paediatric department of Conakry University Hospital. **Methods:** This was a prospective descriptive study lasting six months, from 01 October 2021 to 31 March 2022, in the paediatric wards of Conakry University Hospital. It included all patients aged between 0 and 15 years, received in consultation and/or hospitalised for measles and whose parents agreed to participate in the study. **Results:** Out of 3916 cases of paediatric pathology, we collected 380 cases of measles, *i.e.*, 9.7%. The 0 - 4 age group was the most affected, accounting for 60.8%, with an average age of 26.6 ± 18.8 months and extremes of 3 months and 150 months. Females predominated in 53.2% of cases, with a sex ratio of 0.9. Non-vaccinated children accounted for 226 cases (59.5%). Fever was the most common clinical sign in the study (97.11%), followed by oculonasal catarrh (83.9%) and maculopapular lesions (82.1%). A notion of contagion was noted in 254 patients, *i.e.*, a rate of 66.8%. The main complications were ocular in 229 cases (60.3%), pulmonary in 139 cases (36.6%) and digestive in 124 cases (32.6%). Malnutrition was noted in only 15 patients (3.93%). Treatment was symptomatic. The outcome was favourable in 92.3% of cases. We recorded 20 cases of death (5.3%) and 9 cases of escape (2.4%). **Conclusion:** Despite progress in the control and management of measles, much remains to be done to improve vaccination coverage with the aim of eradicating this disease.

Keywords

Measles, Child, Conakry University Hospital

1. Introduction

Measles is a highly contagious viral eruptive disease caused by a Morbillivirus for which humans are the only reservoir [1] [2]. It is an infectious disease and one of the biggest causes of infant morbidity and mortality in developing countries [3]. Worldwide, the number of reported cases of measles has peaked since 2018. Several countries have experienced severe and prolonged outbreaks of the disease [4]. In 2018, the WHO reported 9,769,600 cases of measles worldwide and 142,200 deaths. Most deaths occurred in children under 5 years of age. In Africa, 1,759,000 cases of measles were reported, including 5,2600 deaths [5]. In 2017, the Democratic Republic of Congo, Somalia and Nigeria recorded 45,107, 23,039 and 11,190 measles cases respectively [6]. Mali reported 1,485 cases of measles in 2018, including 852 cases in children under 5 years of age (57.37%). As for Guinea, 2036 cases of measles were notified in 2017 [6].

In the majority of cases, measles is a mild form of the disease, but it can also cause serious complications, which are common in developing countries [7].

Thanks to the global vaccination programs of the WHO and UNICEF, the estimated number of deaths attributed to the measles virus fell from 733,000 in 2000 to 164,000 in 2008 [8].

As a result, measles is a major public health problem in sub-Saharan Africa, due to its frequency and severity in children, and to inadequate vaccination coverage in most countries [9]. Because of the single reservoir (humans) and the existence of an effective vaccine, it can be eliminated or even eradicated by maintaining a vaccination coverage rate of over 95% [4].

The lack of specific antiviral treatment for measles, its epidemic nature and the inadequacy of vaccination coverage in our country prompted the choice of this topic.

The aim of this study was to investigate the epidemiological, clinical and prognostic profile of measles in children aged 0 - 15 years in the paediatric wards of Conakry University Hospital.

2. Methods

This was a prospective descriptive study lasting six months, from 01 October 2021 to 31 March 2022, in the paediatric wards of Conakry University Hospital. It included all patients aged between 0 and 15 years, seen for consultation and/or hospitalised for measles, whose parents agreed to take part in the study. We did not include in our study patients with other pathologies or those whose parents refused to participate in the study. The parameters studied were qualitative and quantitative, broken down into socio-demographic data (age, sex, vaccination status), clinical data (clinical signs, notion of contagion, and complications), and evolutionary data. Free informed consent was obtained verbally from the parents (or the person responsible). Data were collected anonymously and confidentiality was respected.

3. Results

Out of 3916 cases of paediatric pathology, we recorded 380 cases of measles, *i.e.*,

9.7%.

Socio-demographic characteristics:

The 0 to 4 age group was the most affected, accounting for 60.8%, with a mean age of 26.6 ± 18.8 months and extremes of 3 months and 150 months. Females predominated in 53.2% of cases, with a sex ratio of 0.9.

Unvaccinated children accounted for 226 cases (59.5%) (Figure 1 and Tables 1 - 3).

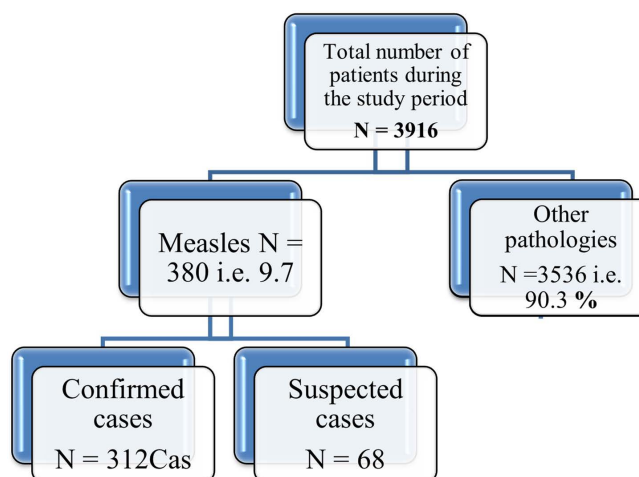


Figure 1. Flow chart of measles cases in the paediatric wards of Conakry University Hospital from 1 October 2021 to 31 March 2022.

Table 1. Distribution of children by age group in the paediatric wards of Conakry University Hospital from 1 October 2021 to 31 March 2022.

Age groups	Workforce	Proportion (%)
0 - 4 years	231	60.8
5 - 9 years	139	36.6
10 - 15 years	10	2.6
Total	380	100.0

Mean age: 26.6 ± 18.8 months; Extremes: 3 months and 150 months.

Table 2. Distribution of patients by sex in the paediatric wards of Conakry University Hospital from 1 October 2021 to 31 March 2022.

Sex	Workforce	Proportion (%)
Female	202	53.2
Male	178	46.8
Total	380	100.0

Table 3. Breakdown of patients by vaccination status in the paediatric wards of Conakry University Hospital from 01 October 2021 to 31 March 2022.

Vaccination status	Workforce	Proportion (%)
unvaccinated	226	59.5
Vaccinated	154	40.5
Total	380	100.0

Clinical features:

Clinically, fever was the most common clinical sign in the study (97.11%), followed by oculonasal catarrh (83.9%) and maculopapular lesions (82.1%). A notion of contagion was noted in 254 patients, a rate of 66.8%. The main complications were ocular in 229 cases (60.3%), pulmonary in 139 cases (36.6%) and digestive in 124 cases (32.6%). Malnutrition was noted in only 15 patients (3.93%) (Tables 4 - 6).

Table 4. Frequency of patients according to physical signs in the paediatric wards of Conakry University Hospital from 01 October 2021 to 31 March 2022.

Physical signs	Workforce	Proportion (%)
Fever	370	97.3
Nasal catarrh oculus	321	83.9
Macule	312	82.1
Papule	312	82.1
Oral hypohemia	184	48.4
Crepitus rales	161	42.4
White coatings	127	33.4
skin desquamation	63	16.6
Signs of Koplick	39	10.3
Rhinorrhea	7	1.8

Table 5. Breakdown of patients according to the notion of contagious disease in the paediatric wards of Conakry University Hospital from 01 October 2021 to 31 March 2022.

Notion of contagious	Workforce	Proportion
Yes	254	66.8
No	126	33.2

Table 6. Frequency of patients according to complications in the paediatric wards of Conakry University Hospital from 01 December 2021 to 31 March 2022.

Complications	Workforce	Proportion
Ocular:		
Conjunctivitis	229	60.3
Pulmonary:		
Bronchopneumonia	139	36.6
Digestive:		
Diarrhoea	124	32.6
Skin:		
Skin flaking	63	16.6
Neurological:		
seizures	41	10.8
Malnutrition	15	3.94

Treatment was mainly symptomatic, based on antipyretics (99.5%), eye drops (97.9%) and vitamin A (97.6%). The outcome was favourable in 92.3% of cases. We recorded 20 cases of death (5.3%) and 9 cases of escape (2.4%) (Tables 7 - 8).

Table 7. Frequency of patients according to symptomatic treatment received in the paediatric wards of Conakry University Hospital from 01 October 2021 to 31 March 2022.

Treatment	Workforce	Proportion (%)
Antipyretics	378	99.5
Eye drops	372	97.9
Vitamin A	371	97.6
Nasal drops	342	90.0
Rehydration	228	60.0
Antibiotics	200	52.6
Multivitamin	111	29.2
Antifungal	82	21.6
Antiemetic	29	7.6
Oxygenation	26	6.8
Anticonvulsant	18	4.7
Nebulisation	10	2.6

Table 8. Breakdown of patients according to progress in the paediatric wards of Conakry University Hospital from 01 October 2021 to 31 March 2022.

Outcome of treatment	Workforce	Proportion (%)
Cured	351	92.3
Deceased	20	5.3
Escaped	9	2.4
Total	380	100.0

4. Discussion

Out of 3,916 children hospitalised, we recorded 380 cases of measles, i.e., a frequency of 9.7%. Our result is higher than that of Boushab M *et al.*, [10] in Mauritania in 2015, who found a frequency of 8.84%. This difference could be explained by the fact that their study lasted three (3) months and was therefore shorter than ours. The 0 - 4 age group was the most affected, at 60.8%. This result is similar to those of most authors, in Africa and elsewhere, who have found that in developing countries, measles prefers to affect children under 5 years of age [4] [5].

Females were predominant in 53.2% of cases. This result differs from those of Rasamoely KE *et al.* [4] and Ahmed *et al.* [11] who reported a predominance of males. We note that gender has no influence on the occurrence of measles in children.

More than half the children had not been vaccinated against measles: 59.3%. This result could be explained by mothers' lack of awareness of the importance of measles vaccination. Our results fall far short of the WHO target of $\geq 90\%$ vaccination coverage [12]. The rate found is certainly lower than in industrialised countries, but it is within the range of limit rates in West African countries, where vaccination coverage varies from 33% to 82% [13]. According to Fermon *et al.* [14], vaccination can control measles and change the epidemiology of the disease when 90% of the population is vaccinated.

Clinically, fever was the most common clinical sign in the study (97.11%),

followed by oculonasal catarrh (83.9%) and maculopapular lesions (82.1%). Our results are comparable to those of Djadou KE *et al.* [15] who found in their study that fever was the most common general sign in 97.4% and oculonasal catarrh in 84.2%.

The main complications were ocular in 229 cases (60.3%), pulmonary in 139 cases (36.6%) and digestive in 124 cases (32.6%). Malnutrition was noted in only 15 patients (3.93%). Boushab *et al.* [10] in Mauritania also noted that fever and rashes were often associated with pneumopathy (83%) and with digestive disorders (42%). As for Djadou KE *et al.* [15], pulmonary complications were more common with a rate of 18.42%, followed by digestive complications (13.15%), and ocular and neurological complications in 2.6% of cases each. According to Bushala Kibandja T [5] in Congo, more than 50% of children with measles had a co-morbidity (malnutrition). Malnourished children generally have a severe deficiency in cell-mediated immunity, which is probably the combined immunosuppressive result of malnutrition and the persistence of the viral infection [10].

A notion of inter-family contact was noted in 254 patients, *i.e.*, a rate of 66.8%. The same finding was noted by Simen-Kapeu A *et al.* [16] in 2005 in Côte d'Ivoire and by Boushab *et al.* [10] in 2011 in Mauritania. This high frequency in our study could be explained by the promiscuity and attachment of children to playgrounds on the one hand, and on the other, by parents' ignorance of the spread of the measles virus.

According to the WHO, a suspected case of measles is a patient presenting with a fever and a maculopapular (not vesicular) rash [17].

Treatment was mainly symptomatic, based on antipyretics (99.5%), eye drops (97.9%) and vitamin A (97.6%). The general measures applied to our patients were similar to those used by Djadou *et al.* [15] in their study carried out in Togo in 2013. The treatment of measles is not specific, but symptomatic treatment can prevent certain complications. In addition, it is recommended that vitamin A be given at the time of diagnosis to improve prognosis [4]. Measles is usually cured without complications in immunocompetent children [18].

The outcome of treatment was favourable in almost all children (92.3%). This result could be justified not only by rapid and appropriate treatment, but also by the proximity of our patients to the paediatric wards. We recorded 20 deaths (5.3%) and 9 escapes (2.4%). Our result is higher than that of Chika and Coll [19] in Nigeria in 2015. This high death rate in our study could be explained by the delay in consultation on the one hand, and on the other hand, self-medication (decoction) before consulting in our facility with complications.

5. Conclusion

Measles is still a common disease in our environment, evolving in an epidemic mode and preferentially affecting unvaccinated children aged 0 to 4. It's a serious disease because of the risk of complications it can cause. However, early consultation followed by prompt treatment can help reduce these complications. There is no specific treatment for measles. Developing an effective vaccination strategy and increasing the rate of vaccination coverage is essential if the disease is to be

eradicated.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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