

## Research

**\*Corresponding author**  
**Toukara Thierno Mamadou, MD**  
 Assistant Professor  
 Department of Dermatology and  
 Venerology  
 Teaching Hospital of Conakry  
 Gamal Abdel Nasser University  
 Conakry, Republic of Guinea  
 Tel. +224622318171  
 E-mail: [tounkm@gmail.com](mailto:tounkm@gmail.com)

Volume 2 : Issue 2

Article Ref. #: 1000DRMTOJ2127

### Article History

Received: August 18<sup>th</sup>, 2017

Accepted: August 30<sup>th</sup>, 2017

Published: August 30<sup>th</sup>, 2017

### Citation

Toukara TM, Soumah MM, Dicko A, et al. Pattern of children hospitalization in a tropical dermatology department: Case of the Teaching Hospital of Conakry (Guinea). *Dermatol Open J.* 2017; 2(2): 41-45. doi: [10.17140/DRMTOJ-2-127](https://doi.org/10.17140/DRMTOJ-2-127)

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# Pattern of Children Hospitalization in a Tropical Dermatology Department: Case of the Teaching Hospital of Conakry (Guinea)

**Thierno Mamadou Toukara, MD<sup>1\*</sup>; Mohamed Maciré Soumah, MD<sup>1</sup>; Adama Dicko, MD<sup>2</sup>; Mariam Touré, MD<sup>4</sup>; Houleymatou Baldé, MD<sup>1</sup>; Boh Fanta Diané, MD<sup>1</sup>; Fodé Bangaly Sako, MD<sup>3</sup>; Fodé Amara Traoré, MD<sup>3</sup>; Moussa Keita, MD<sup>1</sup>; Mamadou Djouldé Kanté, MD<sup>4</sup>; Alhussein Doumbouya, MD<sup>4</sup>; Mohamed Cisse, MD, PhD<sup>5</sup>**

<sup>1</sup>Department of Dermatology and Venerology, Teaching Hospital of Conakry and Gamal Abdel Nasser University, Conakry, Republic of Guinea

<sup>2</sup>National Center for Disease Control Support (CNAM), Bamako, Republic of Mali

<sup>3</sup>Department of Infectious and Tropical Diseases, Teaching Hospital of Conakry and Gamal Abdel Nasser University, Conakry, Republic of Guinea

<sup>4</sup>Department of Dermatology and Venerology, Teaching Hospital of Conakry and Gamal Abdel Nasser University, Conakry, Republic of Guinea

<sup>5</sup>Department of Dermatology and Venerology, Teaching Hospital of Conakry, Republic of Guinea

### ABSTRACT

**Background:** Skin diseases are important morbidity factors in both resource-limited and developed countries.

**Aim:** The objective of this work was therefore to document the different reasons for hospitalization of children in the Dermatology-Venerology Department of the Teaching Hospital of Conakry.

**Methods:** Patients aged less than or equal to 18 years hospitalized in the Department of Dermatology and Venerology of the Teaching Hospital of Conakry (Guinea) from January 2000 through December 31, 2014 were included.

**Results:** During this period of 14 years, a total of 227 patients were recruited. There were 122 (54%) girls and 105 (46%) boys. The boy to girl ratio was 0.85. Bacterial skin diseases (44.5%), inflammatory skin diseases (27.7%), drug reactions (14.9%), viral skin diseases (9.2%) were the most frequent skin diseases. Skin infections, mostly erysipelas and necrotizing fasciitis, accounted for 58.4% of the bacterial skin diseases. Of the non-infectious diseases, toxic epidermal necrolysis (29.4%), acute urticaria (13.7%) and atopic dermatitis (11.7%) were the most common.

**Conclusion:** In the Dermatology Department of the Teaching Hospital of Conakry, the reason for hospitalization of children is dominated by skin infectious, in particular erysipelas and necrotizing fasciitis followed by toxic epidermal necrolyses, with significant morbidity. An improvement in the socio-economic conditions of the population could reduce the prevalence of skin infectious in specialized hospitals.

**KEY WORDS:** Hospitalization; Infectious skin diseases; Children; Dermatology; Guinea.

### BACKGROUND

Skin diseases are important morbidity factors in both resource-limited and developed countries.<sup>1</sup> In children particularly, these dermatological diseases represent a major public health problem with an overall prevalence ranging from 21% to 87%.<sup>2</sup> This high prevalence is particularly influenced by geographical and socio-economic factors.<sup>3</sup>

While the existence of specialized pediatric dermatology consultation has provided data on children in developed countries, the situation remains quite different in resource-limited countries where skin disorders are among the five most common causes of morbidity.<sup>4</sup>

In these countries, which have few dermatologists, there is a low coverage in dermatological care, especially in children with special characteristics in all medical specialties.<sup>2</sup>

These dermatologic conditions are in marked increase and remarkably varied since the advent of HIV infection. They may occur at all stages of the infection, with varying frequency depending on their nature and, for some of them, are more likely to indicate HIV infection.<sup>5</sup>

Kiprono et al reported in a study in northern Tanzania, an HIV prevalence of 5.8% in children with skin diseases.<sup>6</sup>

To date, no data concerning the reasons for hospitalization of children in dermatological settings are available in Guinea.

However, the existence of data on this subject can provide a basis for effective planning of preventive measures in a context of low socioeconomic level such as ours.

The objective of this work was therefore to document the different reasons for hospitalization of children in the Dermatology-Venereology Department of the Teaching Hospital of Conakry.

## MATERIALS AND METHODS

This monocentric, retrospective study was conducted during the period of January 2000 to December 31, 2014 in the Dermatology and Venereology Department of the Teaching Hospital of Conakry (Guinea).

This was a of the records of patients aged less than or equal to 18 years hospitalized in the Department of Dermatology and Venereology.

The patients were grouped into 5 categories based on their age at the hospitalization: 0-12 months, 13 months-2 years, 25 months-6 years, 7-12 years and 13-18 years. For each patient, the variables studied were: age, sex, time of consultation, reason for hospitalization, duration of hospitalization and course of illness.

The different conditions have been grouped into infectious skin diseases (bacterial, viral, parasitic, fungal) and non-infectious skin diseases (immuno-allergic, drug reaction, tumor, congenital).

The diagnosis was made on the basis of detailed history and clinical examination. Complementary investigations (bacteriological, radiological and cutaneous biopsy) were performed when the clinic was not sufficient to establish a diagnosis.

All incomplete files (files not mentioning data such as age, sex, year of admission, diagnosis of hospitalization or evolution) were excluded.

Ethically, the study was approved by the ethics group of the Faculty of Medicine through the research department.

## RESULTS

During this period of 14 years we hospitalized 4,437 patients, of all ages in the dermatology department. Of these, 227 were an age between 0 and 18 years, i.e., a hospitalization rate of 5%.

There were 122 girls and 105 boys with an average age of 11.36 years and extremes of 3 months and 18 years. The boy to girl ratio was 0.85. Twenty-five incomplete files were excluded.

Patients in the 13-18 years group were the most represented, with a proportion of 54.1% followed by the 7-12 years group with 19.8%. The distribution of the different patients by sex and age group is summarized in Table 1.

There were 125 cases (55.1%) of infectious skin diseases and 102 cases (54.9%) of non-infectious skin diseases.

**Table 1:** Distribution of Patients According to Different Diseases.

| Diseases                                  | Frequency (N=227) | %     |
|---|-------------------|-------|
|   | 125               | 55.1  |
| <b>Infectious skin diseases bacterial</b> | 101               | 44.5  |
| Viral                                     | 21                | 9.2   |
| Fungal                                    | 1                 | 0.4   |
| Parasitic                                 | 2                 | 0.8   |
| <b>Non infectious skin diseases</b>       | 102               | 44.9  |
| Inflammatory or immunologic allergic      | 63                | 27.7  |
| Drug reactions                            | 34                | 14.9  |
| Tumor                                     | 3                 | 1.3   |
| Congenital                                | 2                 | 0.8   |
| <b>Total</b>                              | 227               | 100.0 |

Infectious skin diseases were dominated by erysipelas, representing the first pattern of hospitalization with 37.6% followed by necrotizing fasciitis in 20.8% of patients, the majority of whom were between the ages of 13 and 18 years (Table 2).

The non-infectious skin diseases distributed in four entities summarized in Table 3 were largely represented by bullous drug reaction with a proportion of 29.4%.

Retroviral serology was positive for type 1 HIV in nine out of 195 patients who performed it, a prevalence of 4.5%.

There were 5 cases of kaposi disease, by a case of profuse molluscum contagiosum and 2 cases of chicken pox.

The mean hospital stay was 13 days with extremes of 1 and 60 days. The trend was favorable in 87.2% of the cases. The mortality rate was 7.5%.

## DISCUSSION

Our study is the first to document the reasons for hospitalization of children in dermatology department in Conakry.

**Table 2:** Distribution of Patients According to Different Infectious Skin Diseases and Age Groups.

| Effect if (N=125)                    |             |              |                   |            |             |                  |
|--------------------------------------|-------------|--------------|-------------------|------------|-------------|------------------|
| Infectious skin diseases             | 0-12 months | 13-24 months | 25 months-6 years | 7-12 years | 13-18 years | Frequency N (%)  |
| <b>Bacterial</b>                     |             |              |                   |            |             |                  |
| Erysipela                            | 0           | 2            | 9                 | 8          | 28          | 47 (37.6)        |
| Necrotizing fasciitis                | 0           | 1            | 2                 | 7          | 16          | 26 (20.8)        |
| Cutaneous tuberculosis               | 0           | 0            | 1                 | 1          | 8           | 10 (8.0)         |
| Ecthyma                              | 2           | 2            | 0                 | 1          | 5           | 10 (8.0)         |
| Staphylococcal malignant of the face | 0           | 0            | 1                 | 3          | 4           | 8 (6.4)          |
| <b>Fungal</b>                        |             |              |                   |            |             |                  |
| Basidiobolomycosis                   | 0           | 0            | 1                 | 0          | 0           | 1 (0.8)          |
| <b>Parasitaires</b>                  |             |              |                   |            |             |                  |
| Profuse scabies                      | 0           | 0            | 0                 | 1          | 1           | 2 (1.6)          |
| <b>Viral</b>                         |             |              |                   |            |             |                  |
| Chicken pox                          | 0           | 2            | 4                 | 3          | 4           | 13 (10.4)        |
| Kaposi disease                       | 0           | 0            | 0                 | 1          | 4           | 5 (4.0)          |
| Profus Molluscum contagiosum         | 0           | 0            | 0                 | 0          | 1           | 1 (0.8)          |
| Zona femoral                         | 0           | 0            | 0                 | 1          | 1           | 2 (1.6)          |
| <b>Total</b>                         | <b>2</b>    | <b>7</b>     | <b>18</b>         | <b>26</b>  | <b>72</b>   | <b>125 (100)</b> |

**Table 3:** Distribution of Patients According to Different Non-Infectious Pathologies and Age Groups.

| Non Infectious skin diseases N=102          | 0-12 months | 13-24 months | 25 months - 6 years | 7-12 years | 13-18 years | Frequency N (%)  |
|---|-------------|--------------|---------------------|------------|-------------|------------------|
| <b>Inflammatory or immunologic allergic</b> |             |              |                     |            |             |                  |
| Erythrodermic eczema                        | 0           | 0            | 0                   | 5          | 7           | 12 (11.7)        |
| Acute eczema                                | 0           | 0            | 1                   | 0          | 8           | 9 (8.8)          |
| Pyodermaga gangrenosum                      | 0           | 0            | 3                   | 0          | 0           | 3 (2.9)          |
| Atopic dermatitis                           | 0           | 0            | 3                   | 0          | 9           | 12 (11.7)        |
| Erythrodermic syndrome                      | 0           | 0            | 0                   | 0          | 3           | 3 (2.9)          |
| Acute urticaria                             | 0           | 0            | 0                   | 9          | 5           | 14 (13.7)        |
| herpétiforme dermatitis                     | 0           | 0            | 0                   | 3          | 2           | 5 (4.9)          |
| Psoriasis                                   | 0           | 0            | 0                   | 0          | 2           | 2 (1.9)          |
| Lichen planus                               | 0           | 0            | 0                   | 0          | 3           | 3 (2.9)          |
| <b>Congenital skin disease</b>              |             |              |                     |            |             |                  |
| Ichtyosis                                   | 2           | 0            | 0                   | 0          | 0           | 2 (1.9)          |
| <b>Tumor skin disease</b>                   |             |              |                     |            |             |                  |
| Hemangioma                                  | 3           | 0            | 0                   | 0          | 0           | 3 (2.9)          |
| <b>Drug reactions</b>                       |             |              |                     |            |             |                  |
| Toxic epidermal necrolysis                  | 0           | 0            | 9                   | 9          | 12          | 30 (29.4)        |
| Generalized bullous pigmented erythema      | 0           | 0            | 0                   | 2          | 2           | 4 (3.9)          |
| <b>Total</b>                                | <b>5</b>    | <b>0</b>     | <b>16</b>           | <b>28</b>  | <b>53</b>   | <b>102 (100)</b> |

However, it has limitations inherent to its retrospective nature and to the fact that the majority of diagnoses have been essentially clinical due to lack of technical plateau.

Despite these limitations, it allowed us to increase the hospitalization rate for children by 5% over the period from January 1, 2000 to December 31, 2014, an average of 15 hospitalizations per year.

The main reasons for hospitalization were decreasing frequency of bacterial infections dominated by erysipelas followed by necrotizing fasciitis, inflammatory and immunoallergic skin diseases dominated by acute urticaria followed by erythrodermic eczema and atopic dermatitis and, severe drug reactions dominated by toxic epidermal necrolysis.

The hospitalization rate of 5% observed is relatively low compared to the prevalence of 9-37% and 40.9% respectively reported by Sayal et al<sup>7</sup> and Khalifa et al<sup>8</sup>. However, it is higher than that of 0.3% reported by Afsar et al.<sup>9</sup>

On the one hand, this difference in outcome could be related to the mode of recruitment, which in our study took into account only hospitalized cases. On the other hand, other services such as pediatrics share the same enclosure as our recruitment site. In addition to these aspects, cultural contingencies could be added, whereby the majority of patients consult traditional healers first or practice self-medication, consulting the specialist as a last resort, especially for chronic and most skin diseases. Indeed, in some cultures, the tendency to find a supernatural cause for phenomena extends far beyond the framework of medicine.<sup>10</sup>

Different age groups can be reached with unequal proportions. With an average age of 11 years and extremes of 3 months and 18 years; the age group between 13-18 years was the most represented in our study. This result goes in the same direction as that reported by Oninla et al<sup>11</sup> in Nigeria but differed from that of Marrone et al<sup>12</sup> in Ethiopia for whom the age range between 1 and 5.9 years was the most affected.

The type of skin disease in any geographical area is influenced directly or indirectly by various climatic, cultural and socio-economic factors.<sup>3,13,14</sup>

Due to the often unfavorable socio-economic conditions combined with the promiscuity in which most children live, infectious pathologies are considered by many authors to be the most frequent in children in tropical environments.<sup>11,12,14,15</sup> Contrary to the study by Adegbidi et al<sup>16</sup>, for whom immunoallergic skin diseases dominated by eczema, was the leading pediatric dermatosis in hospital in Cotonou. Our study was mainly dominated by infectious pathologies (55.1%) dominated by erysipelas.

This result is similar to that of some authors in the sub-region, where predominant infantile skin diseases were infectious.<sup>17,18</sup>

It is known that HIV infection makes the bed of several skin diseases especially infectious conditions. Only 197 patients out of 227 in our series performed retroviral serology. The breakdown of inputs for the realization of the retroviral serology linked in part to the socio-political disorders that occurred in Guinea during the period of 2007 is one of the justifications for the non-realization of the retroviral serology in all the patients. HIV prevalence among hospitalized children was 4.5%. In the Kiprono et al<sup>6</sup> study in Tanzania, HIV prevalence among children with cutaneous disease was 5.8. In their study, the majority of HIV positive children had inflammatory diseases and Kaposi disease.

In our study, skin diseases associated with HIV infection were dominated by kaposi disease (6 cases) followed by a case of profuse molluscum contagiosum and 2 cases of chicken pox.

These pathologies have a high positive predictive value for HIV infection.

This prevalence of HIV in children (national prevalence in the general population is 1.7) highlights the importance of intensifying HIV prevention campaigns in general and mother-to-child transmission in particular.

Erythrodermic eczema followed by atopic dermatitis were the most common among immunoallergic disorders with respective proportions of 5.3% and 3%. This proportion of immunoallergic skin diseases is different from those reported in developed countries where the prevalence of atopic dermatitis can reach 25.9%.<sup>19</sup>

Toxic epidermal necrolysis accounted for 29.4% of non-infectious diseases.

The hospital stay did not exceed two weeks (average duration 13.43 days) with extremes of 1 and 60 days. Most skin diseases are not life-threatening; however, some of these dermatological pathologies can lead to alterations in the general condition leading up to death. We found a favorable outcome in 87.2% and 7.5% of deaths. Epidemic Kaposi's disease and Toxic epidermal necrolysis were the tables in which the deaths were mainly observed. This is in line with the literature. Mortality due to severe drug reaction is 20-25% during hospitalization.<sup>20</sup>

In the Ivory Coast, Ecra et al<sup>21</sup> reported 10.26% mortality due to skin diseases. It was respectively due to the infectious skin diseases (41.57%), followed tumor dermatosis (29.77%) and drug reactions (16.85%).

## CONCLUSION

With an average hospitalization rate of 5%, this retrospective study shows that the hospitalization of children represents a significant part of the activities of the Dermatology Department of the Teaching Hospital of Conakry.

It also points out that skin infectious, in particular erysipelas and necrotizing fasciitis followed by toxic epidermal necrolysis, are the main reasons for hospitalization with significant morbidity. An improvement in the socio-economic conditions of the population could reduce the prevalence of skin infectious in specialized hospitals.

#### CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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