

Research Article

Cost Assessment of Corticosteroid Therapy for Corticosteroid-sensitive Dermatoses in a Resource-limited Country

Karabinta Y^{1,2*}, Konaté M⁴, Karambé T³, Keita ACF¹, Dicko A^{1,2}, Traoré C¹, Sylla O¹, Coulibaly S¹, Gassama M^{1,2}, Koné C¹, Dissa L¹ and Pr Kéita S^{1,2}

¹Faculty of Medicine and Dentistry, Bamako, Mali

²Dermatologie Teaching Hospital of Bamako, Mali

³Teaching Hospital of Kati, Mali

⁴Teaching Hospital of Gabriel TOURE, Bamako, Mali

More Information

*Address for correspondence:

Dr. Karabinta Y, Assistant, Faculty of Medicine and Dentistry, FMOS/USTTB, P.O. Box: 251, Bamako, Mali, Email: ykarabinta@yahoo.com

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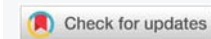
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Keywords: Cost assessment; Corticosteroid therapy; Resource-limited country



Abstract

Introduction: Corticosteroid therapy is widely used in dermatology for treating various conditions. In France, the cost of corticosteroid treatment varies, and in Mali, a significant prevalence of corticosteroid-treated diseases has been reported. Given the prolonged treatment duration often required, understanding the cost implications in resource-limited settings is crucial.

Patients and methods: This descriptive cross-sectional study took place at the dermatology department of the University Hospital Center of Dermatology in Bamako. Data were prospectively collected from patients undergoing corticosteroid therapy over one year. Variables included sociodemographic data, clinical information, and medication costs.

Results: During the study period, 24 cases of dermatoses treated with corticosteroids were identified among 125 hospitalized patients, representing a prevalence of 19.2%. Most patients were women (58.3%), with an average age of 37.5 years. Lichen planus (54.2%) and pemphigus (37.5%) were the most common pathologies. Many patients had extensive lesions before treatment, but the majority responded well to corticosteroids.

Discussion: Despite study limitations, such as its descriptive nature, it provided valuable insights into the economic evaluation of long-term corticosteroid therapy. The predominance of women, the age distribution, and the prevalence of specific dermatoses were highlighted. The study also revealed the substantial financial burden of corticosteroid treatment, primarily driven by direct costs.

Conclusion: The study underscores the financial challenges associated with long-term corticosteroid therapy in dermatology in Mali. The high costs adversely affect patients and their families, especially considering the socioeconomic status of many patients. Moreover, the findings emphasize the importance of comprehensive care strategies and the need for accessible healthcare solutions to address these challenges effectively.

Introduction

Corticoids are molecules derived from natural cortisol, synthesized by the adrenal gland cortex, and characterized by a structural homogeneity of a steroid nature [1]. These hormones are used for their anti-allergic, anti-inflammatory, and immunosuppressive effects. Corticosteroid therapy involves the use of corticoids for the treatment of certain diseases, particularly in dermatology [2]. Since the 1950s, corticoids have gained a prominent place in dermatology

and remain today one of the most effective and commonly prescribed medications [3]. They occupy a privileged position in the therapeutic arsenal for dermatological conditions such as autoimmune bullous dermatoses (pemphigus, pemphigoid, linear IgA dermatosis), and connective tissue diseases (systemic lupus erythematosus, dermatomyositis, systemic sclerosis) [4].

In the United States, in 2004, the FDA [5] estimated that 3% of the population aged 60 to 89, suffering from a chronic



disease and undergoing corticosteroid therapy for more than 3 years, were affected. In Canada, according to the National Health Care, 4% of the population aged 79 to 84, affected by chronic arthritis, undergo corticosteroid therapy for more than a year [6]. More than half of dermatological pathologies respond to corticoids. In France, the average cost of joint infiltration ranges from USD16,11 to USD31,11 depending on the service provider and the type of service [7,8]. This corticosteroid therapy often requires a long treatment duration, hence the interest of the present study to assess the cost of this therapy in a resource-limited country. Specific Objectives: Describe the socio-demographic characteristics of the patients included in the study. Classify the dermatoses that motivated long-term corticosteroid therapy. Determine the financial cost of long-term corticosteroid therapy by pathology.

Patients and methods

Our study took place at the dermatology department of the University Hospital Center of Dermatology in Bamako, one of the reference facilities for dermatological pathologies and sexually transmitted infections. It was a descriptive cross-sectional study with prospective data collection from all patients hospitalized in the dermatology department who received relatively long-term corticosteroid therapy during the period from January 1 to December 31, 2022, covering a duration of 12 months. All hospitalized patients undergoing corticosteroid therapy were included in this study, regardless of gender and age. The studied variables included sociodemographic data (age, gender, occupation, ethnicity, and residence), clinical data (type of dermatosis, location of lesions, treatment received, and treatment outcomes), as well as the cost of medications and adjuvants.

The data were collected on a pre-established and complete survey form.

Inclusion criteria

All patients hospitalized in the dermatology department of the Bamako dermatology hospital whose dermatosis required long-term corticosteroid therapy, with a duration exceeding 3 months, were included in this study. Each included patient underwent regular follow-up, including clinical, paraclinical, and therapeutic data (prescription renewal).

Exclusion criteria

Patients undergoing short-term corticosteroid therapy, patients lost to follow-up, and those with incomplete follow-up to gather the necessary study information were excluded from this study.

Data were entered using SPSS software version 22. The analysis involved describing the study population. Quantitative variables were expressed as mean and standard deviation, while qualitative variables were expressed as proportions. Graphs were created using Microsoft Office Excel

2016, and document writing was performed using Microsoft Office Word 2016.

The free and informed consent of all patients was obtained before their inclusion.

Results

During the study period, we included 24 cases of dermatoses under corticosteroid therapy among the 125 hospitalized patients, representing 19.2%. Women accounted for 58.3% (14 cases), and men for 41.7% (10). The average age of the patients was 37.5 with extremes ranging from 8 to 74 years. Dermatological pathologies that motivated corticosteroid therapy included lichen planus (54.2%), pemphigus (37.5%), scleroderma (4.2%), and dermatomyositis (4.2%). The majority of patients had extensive lesions, covering more than 30% of the body surface before corticosteroid therapy. 58.3% of patients showed a favorable response to corticosteroids. We obtained 14 cases of complete remission, representing 58%, and 4 cases of relapse, or 16.6%. Half of the patients undergoing corticosteroid therapy had a standard of living lower than or equal to the average (less than 6 dollars per day). 37.5% of patients, had a low standard of living (less than 2 dollars per day). The total direct cost represented 85%, or the sum of 4233,32 USD for a year of treatment with 125 hospitalized patients. The average cost of managing patients under corticosteroid therapy was 315,63 USD (with extremes ranging from 492,62 to 1235,67 USD). Three-quarters of the expenses (86%) were attributed to direct costs (corticoids, adjuvants, additional tests, and hospitalization fees). The average cost of managing pemphigus was 168,23 USD with extremes ranging from 18,58 to 315,63 USD. The average cost of managing lichen planus was 40,47 USD francs with extremes ranging from 15,85 to 114,16 USD.

Discussion

Despite the non-representativeness of our sample, the economic evaluation in our study was an innovative element in the management of patients undergoing corticosteroid therapy. The recruitment procedure ensured the validity of the collected data.

Sociodemographic data

At the end of our study, we identified 24 patients undergoing long-term corticosteroid therapy at the Dermatology Department of Dermatology Teaching Hospital. Females predominated with 14 cases, accounting for 58.3%, compared to 10 males, representing 41.7%. The gender ratio favored females.

Patients' age

The majority of our patients were aged ≥ 40 years, accounting for 41.6% of cases. Only two patients were aged between 6 and 15 years, representing 8.3% of cases. 3.2- Education level and occupation: Half of our cases were uneducated (non-schooled), with 13 cases, or 54.2%. They were often farmers, workers, traders, and homemakers.



Clinical data

According to the pathology, Patients with pemphigus under oral corticosteroid therapy accounted for 9 cases or 37.5%. Cases of lichen planus treated by parenteral and local routes were 13 cases or 54.2%. We identified 1 case of dermatomyositis and 1 case of scleroderma. According to the extent of lesions before corticosteroid therapy, half of our patients, 13 cases (51%), had lesion involvement of more than 30% of the body surface before corticosteroid therapy. The lesions were either vesicular or indurated. Most of these patients arrived for specialized consultation at an advanced stage of the disease. Most primary lesions were denatured due to delayed consultation. The advent of corticosteroid therapy has significantly improved their management.

According to the disease's evolution after corticosteroid therapy, We obtained 14 cases of complete remission, representing 58%, and 4 cases of relapse, or 16.6%. Relapse cases and stationary cases are due to medication discontinuation, explained by the lack of financial means due to the treatment's duration.

Economic data

Standard of living: Half of the patients undergoing corticosteroid therapy had a standard of living lower than or equal to the average (less than 6 dollars per day). The other half, 12 cases (50%), had an average income (less than 6 dollars per day). This required contributions from parents or friends, both for the purchase of medications and for subsistence. In contrast, 9 cases, or 37.5% of patients, had a low standard of living (less than 2 dollars per day).

Direct and indirect costs: In our study, the total direct cost represented 85%, or the sum of 4233,32 USD for a year of treatment with 125 hospitalized patients. Pemphigus, scleroderma, and dermatomyositis cases accounted for the financial mass of corticosteroid therapy in our study. The total indirect cost amounted to 771,87 USD, including travel expenses, depreciation of chairs, desks, fans, air conditioner, wardrobe, computer, and others.

Total cost of management: Medical costs corresponded to direct investments involved in treating patients. They represented the majority of financial resources, accounting for 86% of total costs (4297,84 USD). Non-medical costs accounted for 14% of total costs (707,35 USD) and were not directly related to treatment. In Tunisia [9], a study on the feasibility, effects, and cost of antenatal corticosteroid therapy in preventing hyaline membrane disease in premature newborns showed that corticosteroid complications, including maternal and neonatal infections, cost 21,000 Tunisian dinars, equivalent to 6674,12 USD. Finally, we estimated the average cost of treatment at 315,63 USD (with extremes ranging from 50,03 to 1235,67 USD) for regular patients in corticosteroid therapy management, while those found by Kamara M [10] were from 148,22 to 303,17 USD. This sum represented only the cost of general corticosteroid therapy. This suggests that

the average cost estimated from specific treatment could be compared to the visible part of the iceberg. Thus, managing patients undergoing long-term corticosteroid therapy posed a difficulty for a population living below the poverty threshold.

Limitations and difficulties of our study

Our study focused on the economic evaluation of the management of patients undergoing long-term corticosteroid therapy. In Mali, no work had been reported on this subject. We encountered numerous difficulties, including the loss of information related to the retrospective nature of the information provided by some patients, challenges in obtaining accurate information about parents' income, many lost to follow-up due to the high cost of treatment, and the small size of our sample. Despite these limitations, we were able to gain insight into the sociodemographic, clinical, and economic characteristics of managing patients undergoing corticosteroid therapy.

Conclusion

The conclusion of the study emphasizes the financial challenges associated with managing patients undergoing long-term corticosteroid therapy in dermatology at the Dermatology University Hospital Center. The high cost of treatment negatively impacts patients and their families financially. The study identified 24 cases, including 9 cases of pemphigus, 13 cases of lichen planus, 1 case of scleroderma, and 1 case of dermatomyositis. Adjuvants proved essential in mitigating the side effects of corticosteroid therapy. Moreover, the findings emphasize the importance of comprehensive care strategies and the need for accessible healthcare solutions to address these challenges effectively.

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