

Evaluation of Practice of Prescription of the Corticotherapy in the Department of Internal Medicine of the University Hospital of Point G from 2009 to 2013

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Abstract

Introduction: It is estimated that about 0.2% to 0.5% of French populations received a long-term systemic corticosteroid therapy. In Mali, from March, 2007 to February, 2008, in National Center for Disease Control and Prevention, 19.2% of hospitalized patients (24/125) received long-term corticosteroid therapy. Until now, the department of internal medicine of the university hospital of Point G hasn't done any research on the corticosteroid therapy specially. Therefore, we initiated this work to evaluate our practice of prescription of corticosteroid. The target of the study was to evaluate practical activity of prescription of corticosteroid of internal medicine. **Methods:** Based on all hospitalized patient materials of the department of internal medicine of Point G regional university central hospital during January 2009-December 2013, we initiated this retrospective and descriptive study. This study was based on all hospitalized patients receiving corticosteroid in the time of researching, without distinguishing their sex or age. **Results:** During the period of study, the department of internal medicine of point G regional central hospital had received 2155 patients; 64 were eligible: prevalence of 2.97%. Most patients were female, accounting for 87.5% with a sex-ratio of 0.14. The average age of our patients was 39.11 ± 16.92 years, ranging from 14 to 97 years. Physicians enrolled in the study Specialized Diploma (DES) and Internal represented 79.7% of prescribers. As pretreatment assessment, only 2 patients (3.12%) had carried out all of the standard balance (NFS, electrolytes, calcium, blood glucose and serum protein). The most common glucocorti-

coide was prednisone. Solid tumors represented 31.25% (20 cases) of the diseases treated, followed by systemic lupus erythematosus with 15.62% (10 cases). In addition, there are two cases of adrenals insufficiency (3.1%). In Point G internal medicine, pre-therapy evaluation and methods about corticosteroids therapy were insufficient and different.

Keywords

Pratiques, Corticothérapies, Médecine Interne, Bamako, Mali

1. Introduction

Corticosteroid is a derivative compounded by natural hormones, cortisol and prednisone, whose characters are a stronger anti-inflammatory power and, conversely, a lesser mineralocorticoid effect.

Statistically, there were 0.2% to 0.5% of general populations receiving long-term systemic corticosteroid therapy [1].

From January 1st, 1989-December 31st, 2008, an average 0.85% of British population, received oral corticosteroid therapy [2].

In Mali, during March 2007-February 2008, in the National Center for Disease Control and Prevention 19.2% of hospitalized patients (24/125) received long-term corticosteroid therapy [3].

Since 1948 when glucocorticoid was firstly applied to therapy, it has been a top-ranking method of anti-inflammation therapy. The anti-inflammation power of its derivative (corticosteroid) for therapy was stronger than cortisol [4]. In the treatment of quantities of diseases, compounded glucocorticoid had a stronger power of anti-inflammation and immunosuppression at certain pharmacological doses. But it was necessary to add compounded glucocorticoid beyond physical dosage for above effects, and there were quantities of side-effect. Consequently, the cost of therapy cannot be neglected. Glucocorticoid has many effects for water-electrolyte balance as well as the metabolization of carbohydrates, proteins, and lipid. Besides, it must be considered while prescribing that treatments using glucocorticoid depress functions of the hypothalamic-pituitary-adrenal axis or the corticotropic axis [5]. Glucocorticoid (GC) had a quantitative and qualitative influence on the immune system and could destroy cellular immunity, but exerted almost no influence on humoral immunity. At the same time, there was a harmful influence on actors with inflammatory reactions [6].

Dosage and duration of treatment had a certain influence on reactions of hypothalamus-pituitary and the infection risk of corticosteroid treatments and the individual factors which are difficult to determine at present were also pretty important. Now it is difficult to define the least therapeutic dosage or the minimum therapeutic time to avoid its side-effect [5] [6].

So it was clear that corticosteroid treatments must obey a certain number of

rules to avoid accidents and incidents. It was not rare that patients receiving systemic corticosteroid treatments also received supplements of vitamins, calcium and potassium, gastric protection and biphosphonate treatments. Doctors would provide the patients with advices nutrition and health protection, such as changing into the diet of low-sodium, low-carbohydrate and rich-protein as well as increasing regular physical exercise. Among above suggestions, it was rational to prevent osteoporosis by supplements of calcium and potassium, which belonged to recommendations agreed by two sides while other medication and methods of the diet were not recommendations [1] suggested.

At present, the department of internal medicine of Point G regional central hospital has not researched corticosteroid treatments specially. So what about our current practice? Therefore, we initiated this work to evaluate our practice of prescription of corticosteroid used by patients.

The target of this evaluation was to define Point G regional central hospital's frequency of prescription of corticosteroid, to define different treatment methods of using corticosteroid on the department of internal medicine and related side-effect, and to analyze assistant measures related to corticosteroid.

2. Methods

We made a descriptive study with a retrospective screening of our database concerning 64 hospitalized patients' in to the department of internal medicine of the Universitary Hospital of Point G in Bamako—Mali, from January 2008 to December 2013.

The inclusion of the patients have been was exhaustive, and concerned all the patients receiving corticosteroid treatment.

For all of them, we collect:

- The socio-demographics data (age, sex);
- The biologic data before and after corticosteroid treatment (Blood glucose, serum potassium, serum calcium, blood fat, polynuclear rate and rate of lymphocyte);
- Information about treatment (duration and posology of the corticoid treatment, supplement of potassium, calcium and vitamin D, Gastric protection—pronton-pomp inhibitors);
- The side-effects during corticosteroid treatment (acute adrenal insufficiency and rebound phenomenon);
- The diet with low sodium (control of carbohydrate and lipid, diet with rich protein);
- The regular exercise;
- The evolution of the treatment;
- Related data gaining and analysis was done using Epi info software.

3. Results

From January 2009-December 2013, the department of internal medicine of point G regional central hospital received 2155 patients totally, and 64 have been

include to the, with a prevalence of 2.9%.

The average age of patients was 39.11 ± 16.92 ranging from 14 to 97. The women represent 87.5% with a sex/ratio of 0.14. Physicians enrolled in the study was Specialized Diploma (DES) and Internal represented 79.7% of prescribers (**Table 1**).

As pretreatment assessment, only 2 patients (3.12%) had carried out all of the standard balance (NFS, electrolytes, calcium, blood glucose and serum protein). In the department of internal medicine of Point G, pre-therapy evaluation and methods about corticosteroids therapy were insufficient and not standardized (**Table 2**).

Among the 64 cases included, for 36 patients prednisone have been used; for 56.25% of them, 25 patients received methylprednisolone (39.05%) (**Table 2**).

Solid tumors accounted for 31.25% of treated pathologies. These solid tumors was rectal adenocarcinoma, bronchopulmonary cancer, breast cancer, ovarian cancer, pleural carcinoma, uterine leiomyosarcoma, osteogenic osteosarcoma, brain tumor, bladder tumor, gastric tumor, inguinal tumor and scrotal tumor. The systemic lupus erythematosus represented 15.62% ($n = 10$). Two cases of adrenal insufficiency have been observed (3.1%) (**Table 3**).

Regarding other related methods, 52 patients were asked to have a diet with low sodium (81.25%), 52 patients to supply potassium (81.25%) and 31 patients

Table 1. Sociodemographic distribution of patients and the prescribers of corticotherapy ($n = 64$).

Distribution	Frequency	Percentage
Rate of Age (Years Old)		
10 - 35	14	21.88%
36 - 60	30	46.87%
60 - 85	16	25.00%
>85	4	6.25%
Average of Age	39.11 ± 16.92	
Limit of Age	14 to 97	
Sex		
Male	30	46.88%
Female	34	54.12%
Sex/Ratio	0.14	
Prescriber		
DES or Resident	51	79.7%
Rheumatologist	9	14.1%
Hematologist	1	1.6%
Doctoral Candidate	1	1.6%
Internist physician	1	1.6%
Neurologist	1	1.6%

Table 2. Distribution of patients according to the biological pre-treatment assessment, the corticosteroid used and by year of hospitalization.

Biological pre-treatment assessment	Frequency	Percentage
NFS	44	48.43%
Serum Calcium	18	34.37%
Ionogram	18	32.81%
GLU	39	28.12%
NFS + Ionogram + Serum Calcium + GLU + Protidemia	2	10.93%
IIPID BALANCE	1	10.93%
NFS + Ionogram + Serum Calcium	2	53.12%
NFS + Ionogram + Serum Calcium + GLU	5	6.25%
All the Biological pre-treatment assessment		3.12%
Corticoid Used		
Prednisone	29	45.30%
Methylprednisolone	19	29.70%
Dexamethasone	7	10.9%
Betamethasone	1	1.6%
Dexamethasone and Prednisone	1	1.6%
Methyl Prednisolone then Prednisone	5	1.6%
Prednisolone	1	1.6%
Prednisone then Methylprednisolone	1	1.6%
Year of Hospitalization		
2013	23	35.90%
2012	13	20.30%
2011	10	15.60%
2010	9	14.10%
2009	9	14.10%

to supply vitamin and calcium (48.43%). The prescription didn't ask low carbohydrate, a diet with rich-protein or regular exercise in the range of study. The time of corticosteroid treatment of 36 patients was over 15 days (56.25%). Only one case used hydrocortisone (**Table 4**).

4. Discussion

Because this investigation was retrospective, it was difficult to be explained or contrasted with other rare cases in this domain. Regarding international bibliographies, we have seen less than 15 studies about the general prescription of corticotherapy.

In our study, the frequency of prescription of corticosteroid was 2.9%. Petersen found that the frequency in the UK was 0.85% [2]. Fardet estimated that 0.2% to 0.5% of French populations used prescriptions of corticosteroid [1]. The difference could be caused by quantities of samples (the study of Petersen was

Table 3. Distribution of patients according to the pathology treated.

Pathology Treated	Frequency	Percentage
Solid Tumors	20	31.25%
Systemic Lupus Erythematosus	10	15.62%
Non-Hodgkinian Lymphoma	7	10.94%
Nephrotic Syndrome	6	9.37%
Meningitis	5	7.81%
Rheumatoid Arthritis	2	3.12%
Pneumocystis	2	3.12%
Systemic Immune Reconstitution Syndrome	2	3.12%
Compressive Dyspneizing Polyadenopathy	1	1.56%
Hodgkin's Disease	1	1.56%
Acute Root Polyneuritis	1	1.56%
Purpura Thrombopenic Idiopathic	1	1.56%
Meningoencephalitis	1	1.56%
Sharp Syndrome	1	1.56%
Cerebral Abscess	1	1.56%
Myelodysplasia	1	1.56%
Medullary Infarction	1	1.56%
Megaloblastic Anemia	1	1.56%
Total	64	100.0%

Solid Tumors = Rectal adenocarcinoma, bronchopulmonary cancer, breast cancer, ovarian cancer, pleural carcinoma, uterine leiomyosarcoma, osteogenic osteosarcoma, brain tumor, bladder tumor, gastric tumor, inguinal tumor, scrotal tumor.

based on 4,518,753 patients).

The average age of patients was 39.11 years old from 14 to 97 years old. the median ages of short-term and long-term corticosteroid treatments were 56.1 and 67.4 years. In the study of Petersen [2], the difference also might be caused by our quantities of samples. In this study, the ratio of females was 0.88, while in the study of Petersen [2] the ratio of males was 1.5. Prednisone was the most glucocorticoid of prescriptions in our study, accounting for 56.25% of total cases. In the study of Petersen [2], prednisolone represented 89.9% of total prescriptions, followed by dexamethasone, 5.1%. This difference might be due to most of the patients in our study receiving treatment of solid tumors, followed by the treatment of systemic lupus erythematosus, while subjects of Petersen's [2] study mainly received treatment of pneumonopathy. In the study of Fardet [1], the incidence of nodular vasculitis and connective tissue was highest.

In this study, 81.25% of cases were suggested to have a low-salt diet, while 80% of cases were suggested so in the study of Fardet [1].

The lower carbohydrate, a diet with rich-protein or regular exercise were not asked in prescriptions in the range of this study.

In the study of Fardet, 40% of physicians wrote prescriptions of a low-sugar

Table 4. Distribution of patients according to related assistant measures.

Related measures	Frequency	Percentage
Low-sodium diet	52	81.25%
Potassium supplementation	52	81.25%
Vitamin and Calcium supplementation	31	48.43%
Deworming	21	32.81%
Gastric protection	18	28.12%
Low-sodium diet + Potassium supplementation + Vitamin-calcium supplementation + Deworming	7	10.93%
Low-sodium diet + Potassium supplementation + Vitamin-calcium supplementation + Deworming + Gastric protection	7	10.93%
Low-sodium diet + Potassium supplementation + Vitamin-calcium supplementation + Gastric protection	4	6.25%
Carbohydrate controlled diet	0	0%
Protein-rich foods	0	0%
Regular physical exercise	0	0%

diet usually; 20% of physicians suggested having a diet with rich protein, while less than 40% of physicians often suggested exercising regularly for 80% of patients.

45.31% of patients in our studying cases received prescriptions of gastric protection. In the study of Fardet, 10% of doctors usually wrote prescriptions of gastric protection for their patients. There were 81.25% of patients having prescriptions of potassium supplements in our studying cases. In the study of Fardet, 39% of doctors often wrote prescriptions of potassium supplements for their patients.

5. Conclusion

Recently the frequency of prescriptions of corticosteroid increased year by year. Related assistant measures and pre-treatment evaluation were largely different and insufficient. It needed cooperation with other researches and common suggestions of two sides to deal with this problem.

Conflicts of Interest

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

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