Journal of Advances in Medicine and Pharmaceutical Sciences
p-ISSN: 2964-268X, e-ISSN: 2963-4253

Case Report Paper

Study of the Impact of Side Effects of Using Off-Label Drugs in Patients with Systemic Lupus Erythematosus on Health Costs

Iwan Yuwindry[1*], Yusri[2], Hansel Hens Tangkas[1]

[1] *Department of Pharmacy, Faculty of Health, Sari Mulia University. Banjarmasin, Indonesia.*
[2] *Departmen of Accounting, Faculty of Humanities, Sari Mulia University. Banjarmasin, Indonesia.*

Article History
Received:
20.05.2023

Revised:
28.08.2023

Accepted:
07.09.2023

***Corresponding Author:**
Iwan Yuwindry

Abstract: The main problem in conducting lupus treatment is that most drugs for the therapy provided have not been authorized so that they are still included in the class of off-label drugs for the treatment of lupus. The use of off-label drugs can carry the potential for side effects in Lupus patients which have an impact on increasing health costs. This study aims to determine the impact of side effects of using off-label drugs on health costs in lupus patients, as an integrated evaluation in seeking to improve the quality of life and ensure proper care in Lupus patients. This study was conducted using a cross-sectional method by means of a survey using the Naranjo Algorithm instrument (PESO Book) to determine the incidence rate of side effects that exist in LSE therapy using off-label drugs and calculate the health costs of lupus patients. The results showed that the most respondents were in adulthood (19 respondents or 47.5%), then the most respondents were female (37 respondents or 92.5%). Data on the incidence of side effects obtained the most respondents in the Probable category (most likely to occur ROM) of 14 respondents or 35%. In addition, data on health costs incurred by more respondents experienced an increase, namely 23 respondents or 57.5%. The research data shows the calculated r value is 0.3044 and the Sig (2-tailed) value is 0.000 with a confidence level (CI) of 0.05. The results of the analysis clearly show that there is a significant relationship between the side effects of using off-label drugs on the health costs of lupus patients, in this correlation there is a unidirectional relationship, where if the value of side effects experienced by respondents is high, the value of respondents' health costs is also high.

Keywords: Health Costs, Lupus Treatment, Off-Label Drugs, Side Effects, Systemic Lupus Erythematosus.

1. Introduction

An autoimmune rheumatic disease that produces widespread inflammation, affecting organs or systems in the body is known as Systemic Lupus Erythematosus (SLE) [1]. This autoimmune disease is associated with the deposition of autoantibodies and immune complexes that cause tissue damage in the body [2].

There are differences in data for each country with incidence data ranging from 0.9 to 3.1 per 100,000 population per year. Raw data shows 4.3-45.3 per 100,000 population. 1.5 million cases of SLE occur in the United States and at least 5 million cases worldwide based on estimates from.

The prevalence of LES in Indonesia shows a rate of 0.5% of the total population. There were 858 hospitals in 2016 that informed data based on data from the Online Hospital Information System (SIRS). There were 2,166 inpatients diagnosed with Lupus in 2016, 550 of whom died. Banjarmasin's Ulin Provincial Hospital ranked eighth with data from the Online Hospital Information System (SIRS), the incidence rate of new cases was 1.2%.

In the treatment of lupus, almost all lupus therapies most of the drugs used in the 2014 Indonesian Rheumatoid Arthritis SLE Treatment Guidelines have not been approved by the FDA and BPOM RI. The corticosteroid group which is an off-label treatment therapy for LES therapy can cause a large incidence of ADRs in SLE patients [3].

The condition of SLE therapy that uses off-label drugs can affect the cost of treatment experienced by patients which will increase due to the ADR of the off-label drug [4]. Adverse events can have a major impact on increasing health costs. This is because an increase in the incidence of side effects will cause new problems in the patient's health, thus requiring additional patient health costs [5]. Increased health costs caused by side effects will have an impact on the patient's economy, especially in the midst of the current Covid-19 pandemic which has resulted in a decline in various sectors of the community economy. The increase in health costs due to the incidence of side effects is very necessary to know because the data can be used for improvements in the treatment of lupus patients who are more rational by reducing the health costs of cheaper patients [6].

2. Method

This study was conducted using the cross sectional method, which is a method related to independent and dependent variables obtained at a certain point in time or at a certain point in time, and studied the dynamics of the relationship between risk factors and effects during use. The research method is to determine the effect of off-label drug side effects on medical costs in lupus patients. This study is a retrospective study that tracks lupus patients and uses a tool such as the Naranjo algorithm to determine the side effects associated with off-label drugs for lupus disease [7]. This study also used a cost analysis of drug use due to off-label adverse drug events [8]. This analysis can be used to estimate the additional cost caused by each additional unit of outcome [9].

This study sets several criteria as a limit in determining the sample. The criteria consisted of inclusion and exclusion criteria. The selection criteria in this study were all lupus erythematosus patients in the outpatient department of RSUD Ulin Banjarmasin, patients who received SLE treatment with off-label drugs, could read and were willing to participate, with or without side effects. Exclusion criteria set in this study were SLE patients with psychiatric disorders or speech disorders that interfered with the study, and SLE patients who did not want to participate in the study and withdrew while participating in the study.

The survey was conducted on SLE patient respondents from the Internal Medicine Department of Ulin Hospital Banjarmasin. The data collection process was conducted by first interviewing the patient, then deciding to assign the patient as the study sample, and sending the Naranjo Algorithm questionnaire and health cost analysis to confirm the incidence of side effects from off-label use and increased health costs.

3. Finding and Discussion

In this study, a sample of 40 respondents was obtained. This study used instruments, namely the Naranjo Algorithm questionnaire and health costs, then obtained results in the form of data on the characteristics of respondents, the incidence of Off Label side effects, Health Costs of Lupus Patients, Side Effects that occur in Lupus Patients, Use of Off Label Drugs used, The influence between the incidence of side effects on health costs.

3.1. Respondent Characteristics

Respondent characteristics data are seen based on age, gender, education and occupation. Based on age, it was found that the most respondents were in the age range 26-45 years old including in the adult category as many as 19 respondents or 47.5%, followed by the age range 12-25 years old including in the adolescent category as many as 18 respondents or 45% and finally 46-65 years old including the elderly category as many as 3 respondents or 7.5%. The results of this study show results that state the same as existing references that lupus sufferers can be experienced by all ages, but most patients are in adulthood to the elderly. This disease is a complex autoimmune disease and affects patients of childbearing age.

Based on gender, the most data obtained were female respondents as many as 37 respondents or 92.5% and men as many as 3 respondents or 7.5%. This proves that women have estrogen and prolactin hormone factors that have a relationship to the incidence of SLE disease.

Based on education, the most respondents had a college education as many as 22 respondents or 55%. Then followed by respondents with high school education as many as 15 respondents or 37.5% and junior high school education as many as 3 respondents or 7.5%.

Based on the occupation of the respondents, the most respondents were respondents who had jobs outside the civil service and private sector, namely 30 respondents or 75%. Then followed by respondents with private jobs, namely 7 respondents or 17.5% and civil servants as many as 3 respondents or 7.5%.

3.2. Incidence of Off-label Side effects

This data is obtained from the results of an analysis based on the Naranjo algorithm to determine the category of side effects that occur in respondents using off-label Lupus patients. The results obtained showed that most respondents fell into the Probable category (Most likely to occur ROM) as many as 14 respondents or 35%, followed by the Definite category (Definite ROM occurs) as many as 12 respondents or 30%. Then the Possible category (Possible ROM occurs) as many as 9 respondents or 22.5% and finally the No ES category as many as 5 respondents or 12.5%. This proves that the use of Off Label drugs in Lupus patients can cause side effects. The occurrence of side effects in the use of Off Label drugs occurs due to the nature and potential of drugs to cause side effects such as drug selection, the period of drug use and the interaction between drugs. Each drug has a different mechanism and place of action so that it can cause different side effects [10].

3.3. Lupus Patient Health Cost

This study shows the results of a significant increase in costs where the data can be seen from the data of respondents who increased as many as 23 respondents or 57.5%, 16 respondents or 40% in the fixed category, and 1 respondent or 2.5% in the decreased category. This reinforces the statement that the problem of drug side effects cannot be ruled out because it can have various impacts on the use of drugs both in terms of economics, psychology and therapeutic success. Economic impacts such as increased medical costs and psychological impacts on patient compliance in taking medication will fail therapy [11].

3.4. Data on Side Effects that Occurred in Lupus Patients

The incidence of side effects of Off Label drug use, namely events that occur when side effects occur. Events that appear when side effects occur are difficulty moving, moonface, strecthmarks, thinning of the skin, easily porous bones and teeth, ulcers, hair loss, acne on the face, dizziness, nausea, fever, joint pain, headache, stomach pain, and increased weight [12]. This proves that existing references state that the use of Off Label drugs in the treatment of Lupus, which on average are oral corticosteroid drugs, will cause acne, blurred vision, accumulation of fluid in the body, increased appetite and increased weight, stomach irritation, insomnia, mood changes, glaucoma, thinning skin and easy bruising, high blood pressure, muscle weakness, increased growth of hair and hair on the body, susceptibility to infection, increased diabetes, slow wound healing, stomach ulcers, cushing's syndrome, osteoporosis, and depression [11].

3.5. Use of Off Label Drugs Used

Data on the use of Off Label drugs used during the treatment of Lupus disease in respondents, namely Metylprednisolone, Kaltropren, Paracetamol, omeprazole, lansoprazole, imbost, hemaviton, multiviral, Imuran, calos, hdroxycloroquine sulfate, Asthin Force, Calsium, ramipril. The use of these

drugs are drugs that are used to overcome the side effects that occur due to the use of corticosteroid group drugs [13].

3.6. Effect of Adverse Events on Healthcare Costs

This study shows that there is an impact of side effects of off-label drug use on increasing medical costs in Lupus patients. The P-value obtained is 0.000, where the interpretation is that there is an influence between side effects on the increase in health costs incurred [14]. Then for the calculated r value obtained 0.637, where the calculated r value is greater than the r table value of 0.3044. This value indicates that there is an influence between side effects on increasing health costs significantly [15]. In this study, the CI value is 0.05.

4. Conclusion

The results of this study clearly show that the impact of side effects on the use of off-label drugs for the treatment of Lupus disease on increasing healthcare costs is very significant.

References

[1] G. S. Alarcón, "Systemic lupus erythematosus in three ethnic groups: IX. Differences in damage accrual," *Arthritis Rheum*, vol. 44, no. 12, pp. 2797–2806, 2001.
[2] Z. Lamk, A. M. N. Abubacker, M. Prince, and Y. Hariharan, "Histochemical and biochemical studies of parasite – host interaction of Cassytha," *Indian Academy of Sciences*, vol. 89, no. 12, pp. 2156–2159, 2005.
[3] M. Aringer, C. Günther, and M. A. Lee-Kirsch, "Innate immune processes in lupus erythematosus," *Clin. Immunol*, vol. 147, no. 3, pp. 216–222, 2013.
[4] Jennifer, *Buku Ajar Patofisiologi*. Jakarta: EGC, 2010.
[5] H. Isbagio, Z. Albar, and K. Y. et Al., *Lupus Eritematosus Sistemik Dalam Ilmu Penyakit Jilid III, 5th ed*. Jakarta: Interna Publishing, 2009.
[6] Normaliyanti, M. Riduansyah, and E. E. M. Gaghauna, "Effectiveness of Slow Stroke Back Massage Using Ylang Essential Oil on Reducing Blood Pressure Hypertension Patients", *Journal of Advances in Medicine and Pharmaceutical Sciences*, vol. 1, no. 2, pp. 51-56, Nov. 2022.
[7] I. Yuwindry, "Pemberdayaan Masyarakat PESO (Pintar Efek Samping Obat) Dalam Upaya Penerapan Farmakovigilans di Masyarakat dengan Menggunakan Media Video Edukasi," vol. 3, no. 2, pp. 49–54, 2020.
[8] F. Lisyanti, S. Budi, and M. Zulfadhilah, "Formulation Test of Preparations Face Mist Combination of Pomegranate Peel Extract and Mangosteen Peel as an Antioxidants", *Journal of Advances in Medicine and Pharmaceutical Sciences*, vol. 1, no. 1, pp. 15-22, May 2022.
[9] N. Lin and B.-S. Lin, "The Effect of Brand Image and Product Knowledge on Purchase Intention," *Journal. International Manage*, pp. 121–132, 2007.
[10] Iwan Yuwindry and Noval, "Gambaran Kejadian Efek Samping Pada Penggunaan Obat off Label Pasien Lupus," Borneo Journal Pharmascientech, vol. 4, no. 1, pp. 12–21, 2020.
[11] S. Lopez, C. Snyder, and P. JT, *Positive Psychological Assessment, a Handbook of Models and Measures*. Washington D.C: American Psychological Association, 2016.
[12] I. Yuwindry, U. S. Mulia, J. P. Nomor, P. Luar, K. B. Timur, and K. Selatan, "the Consequence of the Side Effects of Off Label Drugs on the Quality of Life of Lupus Patients at Ulin Hospital Banjarmasin," vol. 8, no. 2, pp. 54–61, 2021.
[13] R. H. Dworkin, "Recommendations for the pharmacological management of neuropathic pain: An overview and literature update," *Mayo Clinic. Procedural*, vol. 85, no. 3, 2010.
[14] D. Priyanto, *Teknik Mudah dan Cepat Melakukan Analisis Data Penelitian dengan SPSS.* Yogyakarta: Gava Media, 2010.
[15] Santoso, *Metodologi Penelitian Kuantitatif dan Kualitatif*. Jakarta: Prestasi Pustaka, 2005.