

Original article

Pharmacoeconomic Analysis of Anemia Management in Hemodialysis Patients at Tertiary Care Hospital

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ABSTRACT:

Na The term renal failure denotes the inability of the kidneys to perform excretory function leading to retention of nitrogenous waste products from the blood. Dialysis does the job that is normally carried out by the kidneys. Dialysis also removes salt and water from the body if the kidneys have reduced the amount of urine they are making. To assess the Pharmacoeconomic Analysis of Anemia Management in Hemodialysis Patients at Tertiary Care Hospital. The hospital and Medicine cost of the study patients were assessed and found that, weekly 3 visit patients spend Rs.1,29,936/- for 3 months. Weekly 2 visit patients spent Rs. 64,968/- and weekly one visit patients spent Rs. 32,484/- for 3 Months. The study found that, the combination of Iron sucrose + Erythropoietin drug was reducing the anemia among the Dialysis patient. Erythropoietin is effective and also cost-effective drug.

Keywords: Renal failure, Dialysis, Pharmacoeconomic, Anemia, Erythropoietin.

1. INTRODUCTION

Patients with chronic kidney disease (CKD) on hemodialysis (HD) are at high risk of developing both iron deficiency and iron deficiency anemia (IDA), with prevalence rates reaching as high as 80%. This is mainly attributed to reduced iron absorption, chronic inflammatory processes and increased blood loss. The availability of adequate iron doses for erythropoiesis is a key factor in allowing a good response to erythropoiesis stimulating agents (ESAs) [1]. In cases of absolute or functional iron deficiency, it is necessary to use higher doses of ESAs to obtain a significant erythropoietic response. This is frequent in cases of resistance or Hyper-responsiveness. Erythropoietin deficiency is by far the leading cause of anemia in patients with CKD. The kidney is the primary site of erythropoietin production in adult. Studies utilizing transgenic mice suggest that a population of interstitial fibroblasts (also known as the type I interstitial cell) are the major source of renal erythropoietin synthesis. Deficiency of EPO, as occurs in patients with CKD, retards maturation of red blood cells from progenitor cells into normoblasts and reticulocytes. Furthermore, deficiency of EPO decreases the survival of these immature red blood cells, a process known as neo cytolysis, thereby resulting in anemia..Therefore EPO supplementation is indicated in patients with CKD who manifest anemia [2]. In the absence of other causes, anaemia due to EPO deficiency is often

normocytic and normochromic, implying a reduction in number but not quality of these cells. Because of the strong association between CKD and EPO deficiency, it is often not necessary to measure serum erythropoietin levels prior to treating anemia in these patients [3]. In the presence of other causes of anemia detailed below, therapy with recombinant erythropoietin alone may not necessarily correct anemia, a process known as erythropoietin resistance. Erythropoiesis-stimulating agents (ESAs) are commonly used to treat anemia in people with chronic kidney disease (CKD) [4].

2. MATERIALS AND METHOD

To assess the Pharmacoeconomic Analysis of Anemia Management in Hemodialysis Patients at Tertiary Care Hospital.

Methodology:

A prospective, randomized, comparative study was conducted for the period of 6 months in the Nephrology department of KG hospital. Total of 30 Dialysis patients with both sex were included. Patients those who are Prescribe with Erythropoiesis-Stimulating Agents were analysed for Economic burden and attainment of Hb level were assessed after collecting the data [5].

3. RESULT AND DISCUSSION

The study populations were categorised on age distribution. Majority of the population were under the age group of above 61 years in 56.6% (n=17) followed by 51 – 60 years in 20% (n=6) and 16.6% (n=5) were under the age group of 41 – 50 years of age. And only 6.6% (n=2) patient were under the age group of 30 – 40 years (figure 1).

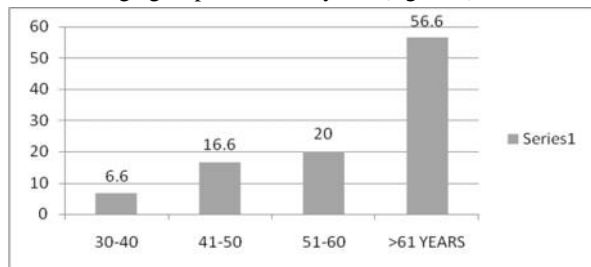


Fig 1: Age distribution of Study population

The study patients were found that, 70% (n=21) were non-vegetarian and 30% (n=9) were Vegetarian. 53% (n=16) were smokers and 60% (n=18) were alcoholic. 40% (n=12) were non- alcoholics and 46.6% (n=14) were Non-smokers as seen in figure 2.

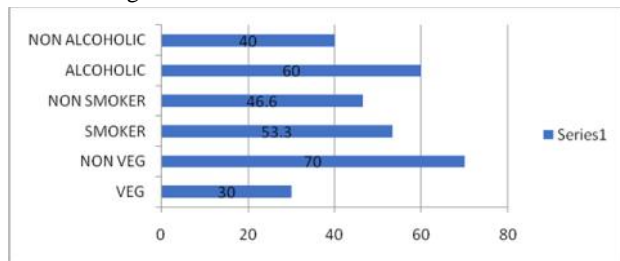


Fig 2: Social History of the study Patients

Tertiary hypertension was majorly present in the study population. 56.6% (n=17) were affected with tertiary hypertension. It was the major reason for the ESRD and leads to Hemodialysis. It may be prevented by Healthy and quality lifestyle as observed in figure 3.

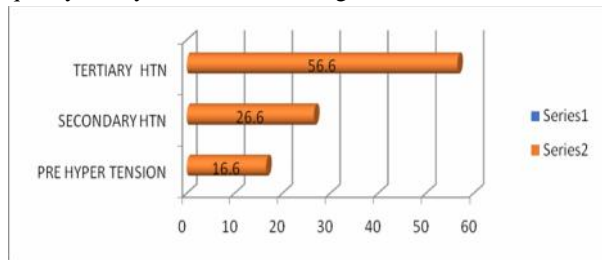


Fig 3: Blood pressure status of the study Population

The study discussed that; the etiology for the ESRD may be the hypertension and Diabetes. Both are prevalent in this study population equally in 36.6% (n=11). It can be eliminated by effective patient counselling to advise the patient to follow a healthy lifestyle as found in figure 4.

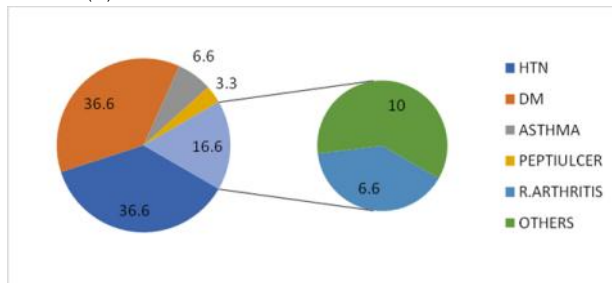


Fig 4: Pastmedical history of the study patients

The study found that Iron sucrose + Erythropoietin was the drug prescribed with 46.6% (n=14). It has a highly effective synthesize Hemoglobin and reduce the symptom of Dialysis induced Anemia [6] among the study patients (Table 1).

Table1: Prescription pattern of Current drugs in studyPatients

Current Drugs	Number of Patients (n)	Percentage of Patients (%)
Iron sucrose + Alpha	11	36.6
Iron sucrose + Desidustat	0	0
Iron sucrose +Erythropoietin	14	46.6
Others	5	16.6

Attainment of Hemoglobin level was assessed with haemoglobin estimation and found that, Iron sucrose+ Erythropoietin patients were attained the Normal Hb –level within week 2 and Iron sucrose + alpha consuming patients were achieved the Normal Hb-level in week-3 and other drugs consuming patients attained the Hb level only at the End of the study (Figure 5).

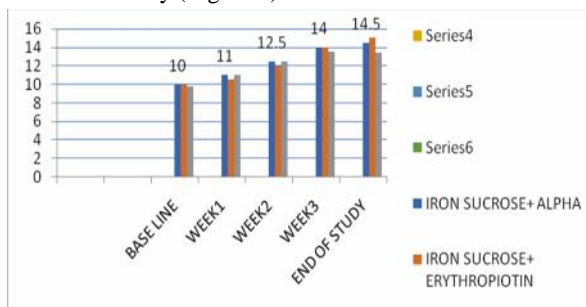


Fig 5: Attainment of Hb-Level Among Study Population

4. CONCLUSION

The hospital and Medicine cost of the study patients were assessed and found that, weekly 3 visit patients spend Rs.1,29,936/- for 3 months. Weekly 2 visit patients spent Rs. 64,968/- and weekly one visit patients spent Rs. 32,484/- for 3 Months. The majority of patient purchase the drugs from Insurance scheme and ESI dispensary. It may be due to easy availability of Insurance schemes and awareness on Health Insurance. It also helps to reduce the economic burden of the study population. The study found that, the combination of Iron sucrose + Erythropoietin drug was reducing the anemia among the Dialysis patient. Erythropoietin is effective and also cost- effective drug.

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