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Comparing Various Chelation Therapies in Thalassemia Patients

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ABSTRACT

Objective: To compare various chelationtherapies used for thalassemia on basis of efficacy.**Materials and Methods:** The study included 80 patients of thalassemia which were divided in two groups, each comprising of 40 patients. Group 1 was administered orally with deferiprone, whereas, group 2 was injected with deferoxamine.**Results:** The patients had an average age of of 20.3 ± 4.3 years. Out of 80 patients, 54 (67.5%) were male and 26 (32.5%) were females. The average ferritin was found to be 2645 ± 1260 for all patients, whereas it was 2545 ± 1232 for group 1 and 2822 ± 1235 for group 2. No significant difference was observed for ferritin level in both the groups (p value=0.232). The complications noted for patients included 18.2% IGT, 7.8% DM and 28.7% hypothyroidism for all thalassemia patients.**Conclusion:** Both therapies showed equal efficiency in control of iron load in thalassemia patients.**Key Words:** Beta-thalassemia, iron chelators, Deferiprone, Deferoxamine

INTRODUCTION

Thalassemia is a hemoglobinopathy caused due to flaw in beta globulin chain production. Its symptoms include anemia and hepatosplenomegaly. The management of beta thalassemia mainly includes blood transfusion, which result in iron overload in various organs (American Diabetes Association 2017). To reduce iron load, iron chelators are used through oral and injectable means. The most common option of iron chelator is deferiprone, which is taken orally as compared to injectable desferoxamine, which reduced iron load from heart and endocrine system (Farmaki, Tzoumari & Pappa 2011). About 60% of the thalassemia patient face iron overload complication of endocrinopathies which involves at least one endocrine organ. Meagre amount of literature is present over comparison of iron chelators on the basis of effectiveness in treating beta-thalassemia (Rostami, Hatami & Shirvani 2011). The present study aims to compare effectiveness of various oral and injectable chelators in terms of certain endocrinopathies such

as hypothyroidism, impaired glucose tolerance (IGT) and diabetes mellitus (DM).

MATERIALS AND METHODS

This research work is an observational, prospective and cohort study. It was conducted at Surya Azeem Hospital, Lahore from 1st March 2018 to 1st March 2019 and included 80 patients suffering from thalassemia. Patients with any respiratory, systemic or renal disorder and those taking long term antibiotic therapy were excluded. The patients were divided in two groups, each comprising of 40 patients. In group 1, patients were administered with oral iron chelator of deferiprone, whereas in group 2, patients were given injectable iron chelator of deferoxamine.

Demographics, clinical and diagnostic findings were noted. IGT was calculated followed by plasma glucose levels during fast. Moreover, PTH, serum calcium and phosphate level were also noted. Informed consent were collected from all patients. For statistical analysis, SPSS v.17 was used. Descriptive statistics included means and standard deviations. For qualitative variables, frequencies and percentages were calculated. Chi square test was used with p value of 0.05 regarded as significant.

RESULTS

The patients had an average age of 20.3 ± 4.3 years. Out of 80 patients, 54 (67.5%) were male and 26 (32.5%) were females. The average ferritin was found to be 2645 ± 1260 for all patients, whereas it was 2545 ± 1232 for group 1 and 2822 ± 1235 for group 2. No significant difference was observed for ferritin level in both the groups (p value=0.232). The complications noted for patients included 18.2% IGT, 7.8% DM and 28.7% hypothyroidism for all thalassemia patients.

DISCUSSION

The present study has evaluated efficacy as well as complications associated with both type of therapies. Before 1987, desferoxamine was the only iron chelator present. The adaptability of patients towards this therapy was poor on basis of



discomfort caused by daily dose and high cost. On the other hand, accessibility towards deferipone helped in attaining treatment acceptance. However, it is found that deferipone has less effectivity than deferoxamine in removal of iron from different organs.

Most of the patients included in present study also comprised of endocrine disorder, where hypothyroidism was most common complication present in both the groups. On the other hand, DM was found more commonly in group 2 as compared to group 1. However, no significant difference was found between both the groups on basis of complications. On the other hand, no significant difference was found between both groups on basis

of ferritin level. Thus, it cannot be said that which group has better efficiency than the other. This finding is supported by previous research works. It is recommended that oral therapy should be used with combination of deferipone and desferasirox to overcome ferritin levels in thalassemia patients. This recommendation has already been put forward in previous research of Farmaki et al. The combination therapy is found to be more efficient than individual ones and lowers ferritin level below the average in patients.

CONCLUSION

It can be concluded that both the therapies have equal effectiveness in managing iron overload in thalassemic patients.

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