Clinical Brief

Effect of Wheat Grass Tablets on the Frequency of Blood Transfusions in Thalassemia Major

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ABSTRACT

Forty patients of Thalassemia Major children were treated with wheat grass tablets (WGT). The mean hemoglobin in the pre WGT was 8.54 +/- 0.33 g% whereas in WGT period was 9.13 +/- 0.14 g% ($p < 0.001$). The mean blood transfused as packed cells in pre WGT period was 326.82 +/- 74.10ml/kg/year whereas during WGT period it was 256.39 +/- 45.47 ml/kg/year. The percentage difference in the amount of packed cells transfused in pre WGT and WGT period was 18.02 +/- 22.96 ($p < 0.001$). The decrease in the blood transfusion requirements was by 25% or more in 20 (60.6%) cases. The mean interval between the consecutive blood transfusions in Pre WGT period was 18.78 ± 4.48 days whereas in WGT period was 24.16 ± 4.78 days ($p < 0.001$). Wheat grass has the potential to increase the Hb levels, increase the interval between blood transfusions and decrease the amount of total blood transfused in Thalassemia Major patients. **[Indian J Pediatr 2010; 77 (1) : 90-91]** *E-mail: drkarnailambrish@gmail.com.*

Key words: *Thalassemia; Wheat grass; Blood transfusions*

Thalassemia is the most common single gene disorder in the world. Over 250 million people worldwide and around 20 million in India carry b Thalassemia gene. About one lakh children are born every year with homozygous state for Thalassemia, 8-10 thousand of whom are born in India.[1]

Today, in the developed world, the life expectancy of Thalassemia Major patients varies between 25 to 55 years mainly depending on compliance with medical treatment. Blood transfusions along with iron chelation therapy have been the mainstay of treatment for years. New therapeutic approaches include bone marrow transplantation, gene manipulation, gene therapy and wheat grass therapy. It has been shown that wheat grass juice reduces blood transfusion requirements in patients of Thalassemia Major.[2] A similar study was conducted in the Day Care Centre for Thalassemia in the Department of Pediatrics, Govt. Medical College, Amritsar with the aim to observe the effect of wheat grass tablets on the blood transfusion in terms of frequency in Thalassemia Major patients.

MATERIAL AND METHODS

Forty Thalassemia Major patients registered with the Thalassemia Day Care Centre and paying regular visits to the centre irrespective of their age, sex, weight and whether on chelation therapy or not were included in the present study after taking informed consent. All the patients were being given packed red blood cells (15 ml/kg body weight) regularly at an interval of 2-6 weeks in an attempt to maintain the pre-transfusion Hb at 9 gm /dl or more. They were given wheat grass tablets(R. J enterprise, Pune, Maharashtra, India. www.greenheartindia.com.)on empty stomach at least for a period of one year from January 2005 to December 2005 in the dose of 2-3,6 and 8 tablets per day in divided doses in children aged 1-3 yr, 4-8 yr and >8 yr respectively (1 tablet=500 mg). For control purposes, one year pre-WGT period *i.e.*, January 2004 to December 2004, was analyzed retrospectively for mean Hb level and mean frequency of blood transfusion from the Thalassemia Day Care Centre records. Any adverse effect associated with wheat grass tablets therapy was also noted.

Exclusion criteria in the study were :

- Splenectomy performed any time during the study period.
- Indiscipline in intake of wheat grass tablets. This included interruption in intake exceeding 3 days / wk or more than 7 days a month.
- Total duration of consumption of wheat grass tablets less than one year period.

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RESULTS

Of the forty patients enrolled in the study, 7 (17.5%) had to be excluded from the study as two patients died during the period of study while five were non-compliant. So only 33 (82.5%) patients fulfilled the criteria for final analysis. Age and weight of enrolled patients are given in table 1.

Table 1. Age and Weight Distribution in Enrolled Patients

	Mean	Range
Age of patients	6.68+/-3.05 years	2-16 years
Weight of patients	20.00+/-5.41 kg	10-29 kg

- The mean Hb in the pre-WGT period was 8.54 ± 0.33 gm% whereas in WGT period was 9.13 ± 0.14 gm% , the difference being statistically highly significant ($p < 0.001$)
- The mean blood transfused (packed cells in ml) per year in the pre-WGT period was 326.82 +/- 74.10 ml/kg/year whereas during WGT period it was 256.39 +/- 45.47 ml/kg/year , the difference being highly significant ($p < 0.001$).

DISCUSSION

The clinical similarity between hemoglobin and chlorophyll was first suggested in 1855.[3] There is anecdotal and research evidence that chlorophyll rich foods such as wheat grass help in some way to build the blood.[4] Recent research indicates that some porphyrins (ringed structure in heme and chlorophyll) which stimulate the synthesis of protein of hemoglobin molecules, may also enhance the body's production of globin. This may partially explain the effect of chlorophyll on hemoglobin synthesis.[5]

Wheat grass is perhaps the best source of obtaining plenty of chlorophyll. Chlorophyll being structurally similar to heme, it gets absorbed rapidly and to a large extent.Once absorbed, the cells in the bone marrow get almost a ready made molecule which after a few changes can be converted to heme. Thus heme production occurs at a faster rate than otherwise.[6]

The beneficial effects of wheat grass therapy have also been attributed to its rich nutritional contents of anti-oxidant vitamins (CandE) and bioflavenoids.[7] This hypothesis is supported by studies that show decreased antioxidant capacities of RBCs of Thalassemia patients as well as beneficial effects on RBCs life span by supplementation with antioxidants in vivo in other haemolytic disorders.[8,9] Similar studies have been conducted in other parts of the country and the world showing the benefits of wheat grass therapy in Thalassemia patients. Marwaha et al have shown that the mean Hb in patients on wheat grass juice therapy was significantly higher than in the pre wheat grass juice therapy period.[2]They have also shown that mean blood transfused in the WGT period was significantly lower than in the pre WGT period in 50% of their study cases. The mean %age difference in the mean interval between the consecutive blood transfusions in the pre WGT and WGT period was 32.54 ± 29.91% ($p<0.001$) in the present study and in Marwaha *et al* study, it was 29.5% ($p<0.001$).

CONCLUSION

The present study is that there is a significant increase in the mean Hb level, decrease in the frequency of blood transfusions and decrease in the mean blood transfused per year after wheat grass therapy in Thalassemia patients.However, mild side effects like nausea and vomiting have been reported in a few cases.

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