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A study on the effect of shatkarma (laghu shankha prakshalana and agnisar) on haemoglobin level in the patients of diabetes mellitus

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Abstract

The world-wide prevalence and rise of diabetes mellitus over the past two decades is clearly evident from growth of an estimated 30 million cases of this disease in 1985 to 285 million cases in 2010. Based on current trends, the International Diabetes Federation projects that 438 million individuals will have diabetes by the year 2030 (Longo et al., 2012). Anaemia, i.e. lowered haemoglobin level, is a very common complication in the patients of diabetes. Present study is aimed at finding out the effects of practice of Shatkarma (Laghu Shankh Prakshalan and Agnisar), a highly reputed Yogic exercise on haemoglobin level in the patients of diabetes mellitus. The result revealed that post -experiment haemoglobin was higher than that of pre-experiment.

Keywords- Shatkarma, Diabetes Mellitus, Laghu Shankh Prakshalan, Agnisar, haemoglobin

Introduction

Diabetes mellitus is a disease which has plagued man for centuries, though it's incidence at present, especially in the more developed areas of the world, is higher than it has ever been in the past. The reason for this is that, through technological achievement, stress and affluence have become increasingly wide spread and people have tended to overeat, but avoid strenuous physical exercise. Thus, the recent flourishing of diabetes can be considered to be a side effect of the 21st century's technological advancement, pollution on personal level reflecting global pollution. Diabetic patients are often found to be anemic, a condition in which the number of red blood cells or the amount of haemoglobin (a protein which facilitates the transport of oxygen from the lungs to the rest of the body) in them is below normal, resulting in diminished supply of oxygen to the body. Nearly half the blood flowing in our veins and arteries consists of red blood cells. Approximately one trillion or 100 million new blood cells are formed daily in the bone marrow. The raw materials required in the production of these cells are Iron, proteins, and vitamins, especially folic acid and B12. Of these, Iron and proteins are essential in building up the red colouring material called haemoglobin (Yoga for Anaemia, 2013). Taking Iron as a dietary supplement is not sometimes useful for the patient due to mucosal block. Diabetic patients often complain of constipation and therefore absorption of Iron and other dietary supplement in them are not found to be proper. The ancient science of Yoga has a more successful method to meet the condition, which is thousands of years old (Tiwari, 2007). Sayyed and his

colleagues showed that after practicing Sudarshan Kriya, there is decrease in total cholesterol and LDL-Cholesterol along with significant increase in HDL-Cholesterol, but non-significant change in hemoglobin level (Sayyed *et al.*, 2010).

Materials and methods

Twenty patients of diabetes mellitus were selected from Ballia district. After selecting 20 subjects on the basis of accidental sampling, they were made to practice Shatkarma for a span of 60 days. Shatkarma included Laghu Shankha Prakshalana (Gherand Samhita 1/17) once a week and Agnisar (Gherand Samhita 1/19), 15-30 rounds daily. Haemoglobin level of each subject was tested before starting the experiment, i.e. Day 1, middle of the practices *i.e.* Day 30 and on completion i.e. Day 60.

Results

The mean haemoglobin level in the patients of diabetes mellitus in the present study was found to be 12.36 ($\pm$1.54) %, 13.36 ($\pm$1.54) % and 14.35($\pm$1.35) % on day 1, day 30 and day 60 respectively (Table 1). It is obvious that the mean value is higher on day 30 than that on day 1, and further higher on day 60 than that on day 1 and day 30. The values of day 1 and day 30 varied at 0.05 significance level, those of day 30 and day 60 at 0.05 and those of day 1 and day 60 at 0.01 significance level. Thus, it is again obvious that higher the duration, higher is the improvement in haemoglobin level.

Table 1. Haemoglobin Level of Diabetic Patients (Mean Value)

Conditions	M (%)	S.D	t- value	Level of significance
Day 1	12.36	1.54	2.11*	0.05
Day 30	13.36	1.54	2.20**	0.05
Day 60	14.35	1.35	4.46***	0.01

*t-value of day 1 & day 30, ** t-value of day 30 & day 60, *** t-value of day 1 & day 60

Discussion

The results clearly indicate that the practice of Shatkarma (Laghu Shankha Prakshalana and Agnisar) enhances the haemoglobin level with respect to duration. The average daily diet contains 10-20 mg of Iron. Its absorption occurs all over the intestine, but majority in the upper part. Dietary Iron is present either as haeme or as inorganic Iron. Haeme Iron is better absorbed (35%) than the inorganic one (~5%), but the former is a smaller fraction of the dietary Iron. Inorganic Iron is found mostly in ferric form and needs to be reduced to ferrous form before absorption can take place. Two distinct Iron transporters appear to function at the luminal surface and at the basolateral membrane of mucosal cells to regulate Iron absorption. Absorption of haeme Iron is largely independent of other foods simulataneously ingested, but that of inorganic Iron is affected by several factors. The factors that facilitate Iron absorption are acidic medium by favouring dissolution and reduction of ferric Iron, reducing substances, such as ascorbic acid, amino acids containing SH radical etc. These agents reduce ferric Iron and form absorbable complexes.

The gut has a mechanism to prevent entry of excess Iron in the body. Iron reaching inside the mucosal cells is either transported to plasma or oxidised to ferric form, ferritin. This ferritin generally remains

stored in the mucosal cells and is lost when they are shed (life span 2-4 days). This is called the *`Ferritin Curtain`* (Tripathi, 2003). Laghu Shankha Prakshalana eliminates the waste foodstuffs, acids and coated layers from gastrointestinal tract. Therefore, the available Iron in intestine is absorbed at optimum level whenever required. The Iron status of the body and erythropoietic activity govern the balance between these two processes, probabaly through a `hematopoietic transcription factor`, and thus a larger percentage of the amount of Iron that enters the body is absorbed during Iron deficiency. When body Iron is low or erythropoesis is occuring briskly, ferritin is either not formed or dissociates soon, and released Iron is transported to the blood (Tripathi, 2003). Thereby Laghu Shankha Prakshalana enhances the level of haemoglobin.

In Agnisar, we exhale through nose as well as mouth completely, then stop breathing whenever abdominal squeeze and massage is going on by repeated expansion and contraction of abdominal muscle. In that condition, brief instants of hypoxia are created that work just as mock-drill, meaning whatever changes arise during temporary hypoxia in body, that changes also arise during these brief instants of hypoxia. The hypoxic effects of Agnisar change the bone marrow microenvironment. There are several conditions that transmit the signals for change in bone marrow about the development of haemopoetic stem cells and hypoxia is one of them. Hence these instants of hypoxic conditions stimulate the bone marrow and may result in development of haemopoietic stem cells. Thus Agnisar improves the production of haemapoietic stem cells in human body. It is an anatomic location where regulatory signals are provided that allows the stem cells to thrive, to expand if needed, and to provide varying amounts of descendent daughter cells (Longo et al., 2012). Thus, it must also regulate the number of stem cells produced. Since Agnisar develops hypoxic condition in our whole body and specifically in abdominal region, and hypoxic condition is responsible for arrival of a large quantity of haemopoietic stem cells in that area (Guyton, 2006), it can be concluded that Agnisar can also bring about haemopoetic stem cells in abdominal region. Therefore, Agnisar can rejuvenate the whole abdominal region, specifically all digestive organs including liver, kidneys, spleen and pancreas simultaneously. That is why all of the cell types in the peripheral blood and some cells in every tissue of the body are derived from hemapoietic stem cells. Thereby Agnisar increases the haemoglobin level in body and revitalizes the whole body simultaneously.

Conclusion

Diabetes mellitus is a psycho-somatic disorder which is adversely affecting the life of human beings .This study concludes that regular practice of laghu shankha prakshalana and agnisar positively improves the haemoglobin level in diabetes patients. Laghu shankha prakshalana eliminates the waste foodstuffs, acids and coated layers from gastro-intestinal tract and, therefore, the available Iron in intestine is absorbed at optimum level and thereby the haemoglobin level is increased. Practice of agnisar develops hypoxic condition in our whole body, specifically in abdominal region. Therefore, large quantities of haemopoetic stem cells arrive in the abdominal region from bone marrow, and thereby, increase the haemoglobin level.

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