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EFFECT OF YOGIC LIFESTYLE MODIFICATION ON ANGINAL EPISODES IN CAD PATIENTS

Medicine

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ABSTRACT

BACKGROUND: There has been an alarming increase in the prevalence of Coronary Artery Disease (CAD) worldwide and is a leading cause of mortality in India. Yoga is emerging as a significant tool in managing the disease.
OBJECTIVES: The study was conducted to find out the effect of yogic lifestyle modification on anginal episodes in CAD patients.
METHODS: This prospective, controlled study included the CAD patients between the ages 30 to 70 years who were randomised to yoga group (group A, n=51) and control group (group B, n=51). They were assessed clinically on the basis of number of anginal episodes per week. The yoga group patients were prescribed a family based yoga programme in addition to the conventional drug treatment for CAD. The control group received conventional drug therapy alone. The patients were assessed at baseline and thereafter, at the end of 6 months.
RESULTS: The number of anginal episodes per week reduced significantly by 25.40% in the yoga group *vis-à-vis* the control group at the end of six months (independent t-test p-value<0.01). It was also inferred from the study that while at baseline, there was no statistically significant difference between the yoga and control groups (independent t-test p-value>0.05), the difference became significant at the end of six months (independent t-test p-value<0.05).
CONCLUSIONS: In the present study, we witnessed a substantial and significant effect of yogic lifestyle intervention in decreasing the number of anginal episodes per week in CAD patients thereby reducing the morbidity associated with the disease considerably.

KEYWORDS

Yoga, Coronary Artery Disease (CAD), Anginal episodes

INTRODUCTION

In the past few decades, there has been an alarming increase in the prevalence of lifestyle related disorders like diabetes and coronary artery disease (CAD) worldwide and India is not aloof from this disturbing global phenomenon. In fact, cardiovascular disease related mortality accounts for about two thirds of the total non communicable disease mortality in India[1]. Plenty of research work has been done till date to establish the factors behind this phenomenon and increased stress and sedentary behaviour have been recognised as the major factors leading to the increase in prevalence of CAD[2,3]. Among the patients with cardiovascular diseases anxiety disorders are associated with poor outcomes including progression of cardiovascular disease and heart failure[4].

With increasing understanding about the role of stress, anxiety and depression in causation of CAD, there has been a renewed interest in exploring the role of age old remedies like yoga among medical researchers in management of CAD as yoga therapy has been proven to be very effective in reducing stress and anxiety[5]. Yoga is an age old concept of lifestyle, health and spirituality and involves the adoption and maintenance of specific body postures and associated controlled breathing techniques. It has emerged as an effective method and means to improve overall personality of an individual and build a healthier society.

The anginal episodes experienced by a patient of CAD have an important bearing on overall prognosis as documented in many studies[6]. Patients with greatest physical limitation due to anginal symptoms have been reported to have 2.5 fold higher mortality in comparison to those with little or no physical limitation[7]. In another study, the anginal score which incorporates the daily angina frequency was found to have significant prognostic value in patients of CAD[8].

The objective of this study was therefore to find out whether yogic lifestyle modification has a beneficial impact in reducing the number of anginal episodes per week which in turn is an important determinant of morbidity and predictor of prognosis in such patients.

RESEARCH METHODOLOGY

The survey of literature was done using internet resources and documents, publications of some of the leading yoga research institutes. Among the internet resources like Pubmed, relevant literature on 'yoga in cardiac disease' and 'anginal episodes' were extensively referred. The citations of relevance were selected and reviewed. It was a prospective, controlled study in which patients of CAD were enrolled after informed consent and followed for six months and conducted at Department of Medicine, LLRM Medical College, Meerut during 2008-2009.

INCLUSION CRITERIA

Patients of Stable Angina and MI, Patients of both sexes between the ages of 30 and 70 years, Patients who gave informed consent for being a part of the study and Patients who were mentally and physically fit up to a minimum level required to participate in the study were included.

EXCLUSION CRITERIA

Patients with history of acute MI in recent past (within last 2 months) and unstable angina pectoris, Patients with clinically significant Cardiac failure, Patients who had already undergone coronary angioplasty or bypass surgery and Patients with LV Ejection fraction (LVEF) <20% were excluded from the study. However, those with EF between 20-30% were included in the study and prescribed mild asanas considering their poor cardiovascular reserve status.

Detailed history was recorded and thereafter, all the patients participating in the study were subjected to thorough clinical assessment and routine investigations. The patients were randomly assigned to one of the following two groups with enrolment of 51 patients in each group:

Group A (Study Group/ Yoga Group): Patients of CAD on conventional drug treatment and undergoing yoga therapy.

Group B (Control Group): Patients of CAD on conventional drug treatment and not undergoing yoga therapy.

Patients in the study group were advised strict yoga based lifestyle modification. Concept of yoga which includes correct routines, cultivation of positive attitudes and sattvic yogic diet were explained to the participants. They were trained in yogic techniques and asanas useful for heart like tadasana, padhastasana, vajrasana, shashankasana, pawanmuktasana, shavasana and pranayama. Techniques and illustrations of these alongwith the necessary precautions were given to each participant in the form of *yog pustika*, published in Hindi, the local language. Participants were told to practice yoga regularly for atleast 60-80 minutes a day. Patients with LVEF 20-30% were prescribed only mild asanas which they could perform without discomfort.

Patients were assessed at baseline and at the end of six months for number of anginal episodes/ week. Mean and standard deviation alongwith change on this parameter were calculated for each group at baseline and at 6 months. All the data were expressed till two decimal places and presented as ±1 SD unless stated otherwise. Significance of difference within each group was calculated by paired t-test and between yoga and control groups was calculated by independent t-test. The significance level of 5% has been considered for reporting the results. The calculations were done either manually or using SPSS (Statistical Package for Social Sciences) software.

RESULTS

A total of 102 patients were enrolled in the study and a fairly large number of them (91 patients) completed the study. While in Group A (patients undergoing yoga therapy in addition to conventional drug treatment for CAD), out of 51 patients who were enrolled, 46 patients (90.2%) completed 6 months follow up and the rest were lost in the follow up, in the Group B (patients on conventional drug treatment for CAD not undergoing yoga therapy), out of 51 enrolled patients, 45 patients (88.2%) completed their 6 months follow up.

The baseline characteristics of the patient population are detailed in Table 1. It can be seen from the Table that there were no significant differences between the study and the control groups at baseline in any of the characteristics examined (independent t-test p-value > 0.05) and thus it can be inferred that both the groups reflect the same population.

Table 1 Baseline characteristics of study and control groups

S.N	Parameter	Study group	Control group	P-value (independent t-test)
1	Mean no. of anginal episodes/week	6.30 ± 2.30	6.31± 1.94	0.99
2	Mean age (years)	52.89 ± 8.83	54.36 ± 11.64	0.50
3	Percentage of males	76.09	73.33	0.76*
4	Percentage of females	23.91	26.67	0.76*

*= Chi-square Test P-value

Table 2 shows that there is a significant reduction of 25.40% (paired t-test p-value< 0.05)) in anginal episodes/week in the patients in the yoga group (Group A) at the end of six months. In the control group patients, there was no statistically significant change from baseline value (paired t-test p-value >0.05). It is also evident from the same Table that while at baseline, there was no statistically significant difference between the yoga and control groups (independent t-test p-value>0.05), the difference became significant at the end of six months (independent t-test p-value<0.05). This can be attributed to the significantly beneficial impact of yoga on anginal symptoms.

Table 2 Number of anginal episodes/week at baseline and 6 months

Group	Pre study (baseline) Mean no. of anginal episodes/ week	Post study (at 6 months) Mean no. of anginal episodes/week	Mean difference	Difference in percentage	P- value within the group (paired t-test)
Yoga group (Group A)	6.30 ± 2.30	4.70 ± 1.81	-1.60	-25.40%	<0.001
Control group (Group B)	6.31 ± 1.94	6.24 ± 1.96	-0.07	-1.12%	0.81
P- value (independent t-test)	0.99	<0.001			

DISCUSSION

Studies on the impact of yoga on CAD patients have been going on since past many decades. Initial studies focussed on the role of yoga on the risk factors of CAD like blood pressure, weight and lipid profile. Yogic asanas have been reported to have beneficial effect in controlling blood pressure, weight and cholesterol levels in patients of CAD[9]. Studies have also convincingly demonstrated that regular yogic practice is as effective in controlling hypertension as medical therapy[10,11]. Yoga has also been shown to improve serum lipid profile and control obesity in both healthy persons and CAD patients[12,13].

Yoga based studies have also examined the impact of yoga therapy on overall morbidity associated with CAD of which anginal episodes per week is an important parameter. A landmark study conducted in 1983 found a remarkable 91% reduction in the frequency of anginal chest pain episodes in CAD patients with lifestyle modification at 1 year from 5.8 episodes to 0.5 episodes per week[14]. It was this landmark study which made the world look into the role of yoga and lifestyle modification on CAD with a renewed interest. The study also reported a reduction in anginal chest pain duration from 3.1 to 1.8 minutes after 1 year of therapy.

Subsequently, in a study conducted at New Delhi, the effect of yoga on the frequency of anginal episodes in CAD patients was studied and followed up for a period of one year[15]. The yogic lifestyle intervention in the study included vegetarian low fat and high fibre diet, stress management and other yogic exercises. The study reported a statistically significant 73% reduction in the anginal episodes per week in yoga group from a baseline of 6.7 anginal episodes per week to 2.1 episodes per week after one year. On the contrary, the control group patients had a worsening of symptoms and showed 47% increase in anginal episodes per week.

Similarly, in another study, significant improvement in New York Heart Association (NYHA) angina classification was observed from baseline (3.08±0.56) to 5th year (2.34±0.62) of follow up with p<0.0001[16]. The number of drugs used for angina and heart disease was also decreased from baseline (4.36±1.35) to 5th year (2.95±0.65) of follow up after yoga therapy.

The mechanism by which yoga has a positive effect on anginal symptoms has been explored in some studies. In a study, it was reported that yoga based guided relaxation helped in reduction of sympathetic activity with reduction in heart rate, oxygen consumption and increase in breath volume thus facilitating protection against angina and myocardial infarction[17]. However, more studies are needed in this regard.

The results of our study are consistent with those of the above mentioned studies. The number of anginal episodes per week reduced significantly in the present study by 25.40% in the yoga group from 6.3 to 4.7 episodes per week at the end of six months of therapy while the control group showed a reduction of only 1.12% in anginal episodes at six months. The greater reduction in anginal episodes as mentioned in the previous studies might be due to the longer duration of follow up of patients on yoga therapy.

Limitations of the study

This study is a modest attempt in one of the important areas of role of yoga in heart disease and it hopes to encourage further research in this field. The exact mechanism by which yoga impacts anginal symptoms needs to be elucidated further. This can form a subject of future study and may help to further explore the mechanism of effect of yoga in CAD.

Furthermore, CAD has a chronic course and studies need to be done over longer period of time to demonstrate the effect of yoga therapy on natural history of the disease. We recommend further large scale studies for longer follow up with intensive investigative approach to calibrate the benefits of yoga therapy in patients of CAD.

CONCLUSIONS

Yoga therapy (in conjunction with conventional drug treatment for CAD) improves anginal symptoms and leads to substantial and significant reduction in anginal episodes per week in patients of CAD.

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