Journal of Applied Sciences

ISSN 1812-5654

science alert

ANSInet
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Journal of Applied Sciences 9 (1): 188-192, 2009
ISSN 1812-5654

Self-Hypnosis in Attenuation of Asthma Symptoms Severity

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Abstract: According to probable effects of psychological stress on exacerbation of asthma symptoms, utilizing complementary therapies such as hypnosis may be an effective treatment for reduction of asthma symptoms severity. Forty asthmatic patients were randomly allocated to self-hypnosis and control groups. Person's subjective perception of dyspnoea in both groups was assessed in 4 different stages via modified MRC scale (Modified Medical Research Council Dyspnoea Scale; range 0-4). Also, the Forced Vital Capacity (FVC) and Forced Expiratory Volume in one second (FEV_1) were measured through spirometry twice a time, once prior to and again at the end of this one month study period. Only 72.5% of the patients completed the trial. The median change in dyspnoea symptom scores was greater in self-hypnosis group than control group ($p = 0.004$). There was no significant difference in FVC, FEV_1 and FEV_1% within each group and between them. According to the results, self-hypnosis can improve symptoms but does not seem to change lung function in asthmatic patients, at least in short periods of time.

Key words: Asthma, hypnotherapy, FEV_1, dyspnoea

INTRODUCTION

Asthma is a chronic inflammatory disease of respiratory system which different factors such as genetic, environmental, infectious, allergic and psychological elements play an important role in its genesis. One factor which seems to be effective in triggering the symptoms of this disease is the psychological stressors. Association between stress and asthma emerges from a wide range of clinical observation and evolving research. Indeed, before the understanding of the inflammatory basis of asthma, it was among the disorders believed to be purely psychogenic in origin.

Asthma is typically treated with pharmaceutical products but due to different side effects of most of asthma medications in long term use and this fact that psychological disorders including emotional stress, anxiety or depression may play a part in asthma exacerbation (Ritz and Steptone, 2000; Sandberg *et al*., 2000; Richardson *et al*., 2006), there is an interest in using complementary treatments such as meditation, yoga breathing exercises, relaxation therapy and hypnosis for this disease.

Hypnosis has been used clinically to treat a variety of disorders including physical and mental disorders. It has been also used for many years in the treatment of asthma but, studies of its usefulness have been controversial.

The aim of this study was to determine, if there is any evidence for the clinical efficacy of self-hypnosis in treatment of asthma symptoms or significant improvement in objective lung function tests. Earlier studies have shown that hypnosis is an effective method for reduction of asthma symptoms. Children in particular appear to respond well to hypnosis as a tool for improving asthma symptoms (Hackman *et al*., 2000). In one multicentre trial which, the effect of hypnosis on asthma symptoms was examined over the period of 1 year in 252 children and adults with moderate, persistent, or severe asthma. It was shown that hypnosis significantly increased FEV_1 compared with baseline ($p<0.05$) but only by 4.3% (Maher Loughnan *et al*., 1962). In another study that in which the efficacy of hypnosis on exercise-induced asthma was assessed in 10 asthmatic patients, it was shown that hypnosis prior to exercise resulted in a 15.9% decrease in FEV_1 compared with a 31.8% decrease on the control days ($p<0.001$) (Ben-Zevi *et al*., 1982).

MATERIALS AND METHODS

Subjects: Forty non-smoking asthmatic patients with stable asthma were recruited among volunteers of the Clinic of the Ghaem Hospital University, Mashhad, Iran since March, 2007- 2008. Inclusion criteria were age 20-55 years, mild to moderately severe asthma and taking an inhaled short acting $ß_2$ agonist at least twice a week

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and regular inhaled corticosteroids with no change in dose in the preceding 4 weeks. None of the patients has any other significant disease.

Measurements: Asthma was diagnosed based on symptoms and spirometric findings (FEV_1 changes >200 mL or 15% in the bronchodilator test). The severity of disease was assessed using FEV_1 and symptom of patients. Person's subjective perception of dyspnoea in both groups was measured through modified MRC scale once before starting the trial and at 3 intervals thereafter (approximately each 10 days - overall 4 records for each group). The modified MRC scale uses the same descriptors as the original MRC scale in which the descriptors are numbered 1-5. The modified MRC scale (0-4) is used for calculation of BODE index.

Changes in FEV_1, FVC and FEV_1%, of the patients was assessed through the spirometry method (Fukuda, ST 95, Japan) performed by an experienced technician in two stages, once, prior to utilizing the self-hypnosis technique and again, at the end of the one month period of this trial.

Protocol: Subjects were randomly allocated to self-hypnosis and control groups. Self-hypnosis was taught to individual patients of self-hypnosis group (20 from 40 patients) by the pulmonologist who had received training in hypnotherapy through a 20 h hypnosis workshop offered by the Iranian Society of Clinical Hypnosis. The hypnosis session for each patient took approximately 45 min. This session usually started with a pre-hypnotic interview during which the concept of hypnosis was introduced to the patients. Then patients were taught how to employ an imagery to achieve relaxation (including Progressive Muscle Relaxation technique) and imagery intended to help relieve their dyspnoea (they were taught how to imagine that their lung appearance may change from a dyspneic to a healthy state)(Anbar, 2001).

Patients in control group were asked to utilize self-hypnosis as much as they thought was helpful to them (minimum once a day) beside the pharmaceutical agents recommended by pulmonary specialist.

The control group patients were asked to consume their common medications without any hypnotherapy intervention.

Outcome measures: The primary efficacy variable was symptom scores and the relationship between reduction of dyspnoea symptom severity in self-hypnosis group patients and the duration of suffering from asthma disease. The secondary outcome included FEV_1, FVC and FEV_1%.

Analysis of data: Only available data for the 29 patients who completed the study were analyzed. Changes in FEV_1, FVC and FEV_1% were compared between and within groups (separately for self-hypnosis and control groups) by analysis of variance. The Kruskal-Wallis test was used to compare changes from baseline for median symptom scores. For determination of the relationship between reduction of dyspnoea symptom severity in self-hypnosis group patients and the duration of suffering from asthma disease. The Logistic regression was used.

RESULTS AND DISCUSSION

Only 72.5% of all patients of these 2 groups, self-hypnosis (16/20) and control (13/20) groups completed the trial period.

None of the patients in these 2 groups, control and self-hypnosis groups, showed exacerbation in dyspnoea symptom during this one month period trial. The maximal change in dyspnoea symptom score according to the person's subjective perception of dyspnoea and through modified MRC scale was -2 (which means the symptom was reduced 2 degrees) and the minimal change was 0 (which means the symptom did not show any reduction) (Table 1, 2).

The median change in dyspnoea symptom scores (from recorded data in 4 different stages at one month) was 0 (3 to 3) in the control group and -1 (3 to 2) in the self-hypnosis group. The difference between 2 groups was significant ($p = 0.004$). Thus, Dyspnoea Symptom remained relatively stable in the control group but was reduced in the self-hypnosis group (Fig. 1-3).

There was no evidence for the relationship between reduction of dyspnoea symptom severity in self-hypnosis group patients and the duration of disease in this trial. There was no significant difference in FEV_1, FVC and FEV_1% between 2 groups and within them.

In this randomized trial, subjects taught self-hypnosis technique had reduced asthma symptoms (especially dyspnoea symptom) compared with subjects in control group who just consumed their common drugs.

Table 1: Minimum and maximum of reduction in dyspnoea symptom scores of both self-hypnosis and control groups. As it is shown the minimum of changes in both groups is 0 and the maximum of changes is 2(-2 shows 2 degrees of reduction in dyspnoea symptom severity)

Dyspnoea symptom score reduction (control and self-hypnosis groups)				N	
Minimum	Maximum	Mode	Median	Valid	Missing
0.00	-2.00	0.0	0.0	87	0.0

Table 2: Only 3 groups of changes were obtained (-2,-1, 0). The 0 group include patients who did not show any changes in their dyspnoea symptom severity and -1 or -2 groups include those patients who had 1 or 2 degrees of reduction in their symptom severity, respectively. Eighty seven data were resulted from 4 records for both groups. Thirty nine of them related to control group patients (13 patients) and 48 of them related to self-hypnosis group patients (16 patients)

Intensity of changes in dyspnoea symptom scores	Groups					
	Self-hypnosis		Control		Total	
	Count	Total (%)	Count	Total (%)	Count	Total (%)
-2.00	1	1.1	0	00.0	1	1.0
-1.00	26	29.9	10	11.5	36	41.4
0.00	21	24.1	29	33.3	50	57.5
Total	48	55.2	39	44.8	87	100.0

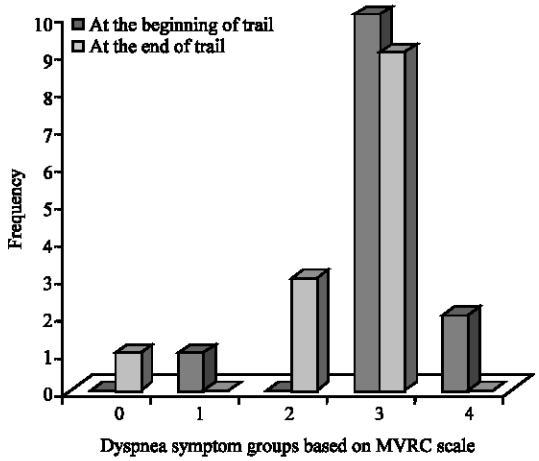

Fig. 1: Frequency of self-hypnosis group patients in each group of dyspnoea symptom scores (based on modified MRC scale) prior to utilizing self-hypnosis and at the end of one month trial period

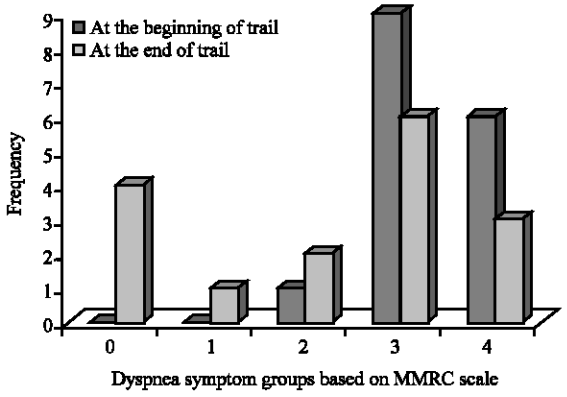

Fig. 2: Frequency of control group patients (without self-hypnosis intervention) in each group of dyspnoea symptom scores (based on modified MRC scale) at the beginning of trial and at the end of one month trial period

There was no difference in FEV_1, FVC or FEV_1% between self-hypnosis and control groups.

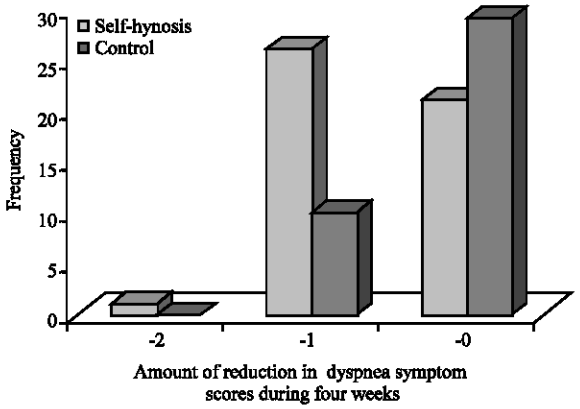

Fig. 3: Mean of changes in dyspnoea symptom scores during 4 weeks of trial. 0 shows no change in symptom after utilizing self-hypnosis or medication. -1 and -2 show the degree of reduction in symptom scores (respectively 1 and 2 degree)

Asthma is a multifactor disease of respiratory system followed by a bronchospasmic process. The parasympathetic nervous system innervates the airways via efferent fibers from the vagus nerve and synapse in ganglia in the airway wall with short postsynaptic fibers directly supplying the airway smooth muscle and submucosal glands. Activation of the cholinergic parasympathetic fibers innervates the bronchial smooth muscles lead to bronchoconstriction. Human airway smooth muscle is not functionally innervated by adrenergic axons but, submucosal glands, bronchial blood vessels and airway ganglia are innervated by adrenergic fibers. Asthmatic subjects have been characterized by β- adrenergic hyporesponsiveness and α-adrenergic and cholinergic hyperresponsiveness.

One factor which seems to have an effective role in asthma exacerbations is psychological stress. The effectiveness of this factor is discussable in different aspects but one thing which is obvious is that, both the duration and the frequency of experienced stress are

important determinants of its impact on health and illness. Studies have shown that exposure to the chronic stress for a long time period may induce a state of hyporesponsiveness of the HPA axis whereby cortisol secretion is attenuated, leading to increased secretion of inflammatory cytokines typically counter regulated by cortisol. This hyporesponsiveness of HPA axis may lead to increase of inflammatory cytokines which have an important role in asthma symptoms (Yehuda *et al*., 1996). Another study has demonstrated that the presence of anxiety or depressive disorder is highly associated with increased asthma symptom burden for youth with asthma (Richardson *et al*., 2006). Although there are some studies that are not able to state the relationship between emotional stress and asthma (Laube *et al*., 2003),various studies have shown that stress, anxiety, depression and negative emotional mood states are among those factors that may increase the risk of asthma attacks and change the lung function (Ritz and Septone, 2000; Sandberg *et al*., 2000; Richardson *et al*., 2006).

Dyspnoea is a common symptom of asthma. The mechanisms involved in its genesis are not completely understood but there is evidence which shows that it can be affected by psychological stressors (Burdon *et al*., 1994). In many different studies performed on the efficacy of using pharmaceutics such as morphine or diazepam, anxiolytic properties of such agents and reduction of ventilatory drive were introduced as a probable mechanism of their effectiveness on dyspnoea symptom (Woodcock *et al*., 1981).

Whatever the mechanism, acute emotional arousal and long-term stress probably have effects on asthma and each probably has different effects depending on stress histories of the individuals involved. Therefore, using psychotherapy or relaxation techniques for treatment of asthmatic patients may be beneficial.

Earlier studies which were designed for demonstration of the efficacy of meditation, yoga breathing exercises and hypnosis in treatment of asthma symptoms have shown a reduction in its symptoms but none of them shown any significant changes in lung function (Manocha, 2003; Cooper *et al*., 2003; Lehrer *et al*., 1997). In this study the same results were obtained.

According to the results of various studies mentioned above, the efficacy of self-hypnosis in reduction of asthma symptoms is discussable from different views.

Firstly, utilizing self-hypnosis may lead to a decrease in the activity of cholinergic neurons innervating the bronchioles or lead to an increase in the activity of adrenergic neurons against bronchial spasm via changes in upper regions of the brain involving in the control of sympathetic fibers innervating respiratory system. These regions according to their neuroanatomic associations with control centers of sympathetic system may reduce the action potential rate of mentioned neurons and lead to bronchodilation.

Secondly, according to this theory that hypnosis may be followed by a kind of conditioning, it is not far from mind to hypothesize that synaptic function and neurotransmission of centers involved in bronchoconstriction, are affected with conditioning.

Thirdly, as a result of hypnosis the activity of inflammatory system via the effects of local or central (brain) factors may be changed.

Finally, self-hypnosis may influence the respiration mechanic in a same process with what mentioned about anxiolytic drugs such as morphine or diazepam.

More studies are required for demonstrating the mechanisms which make the hypnosis as a useful method in reduction of asthma symptoms.

CONCLUSION

Self-hypnosis is an effective technique for improvement of asthma symptoms, but does not seem to have any significant effect on objective lung function, at least in short periods of time.

ACKNOWLEDGMENTS

This study was supported by the Ferdowsi University Grant No. T/2180-2005. We would like to thank the Iranian Society of Clinical and Experimental Hypnosis and Ghaem Hospital of Mashhad Medical University for their supports and helps. Finally, we are must grateful to the families that participated in this research.

REFERENCES

Anbar, R.D., 2001. Self-hypnosis for management of chronic dyspnoea in pediatric patients. Pediatrics, 107: e21-e21.

Ben Zvi, Z., W.A. Spohn, S.H. Young and M. Kattan, 1982. Hypnosis for exercise-induced asthma. Am. Rev. Respir. Dis., 125: 392-395.

Burdon, J.G.W., M.C.F. Pain, A.R. Rubinfeld and A. Nana, 1994. Chronic lung disease and the perception of breathlessness: A clinical perspective. Eur. Respir. J., 7: 1342-1349.

Cooper, S., J. Oborne, S. Newton, V. Harrison, T.J. Coon, S. Lewis and A. Tattersfield, 2003. Effect of two breathing exercises (Buteyko and Pranayama) in asthma: A randomized controlled trial. Thorax, 58: 674-679.

Hackman, R.M., J.S. Stern and M.E. Gershwin, 2000. Hypnosis and asthma: A critical review. J. Asthma, 37: 1-15.

Laube, B.L., B.A. Curbow, S.T. Fitzgerald and K. Spratt, 2003.. Early pulmonary response to allergen is attenuated during acute emotional stress in females with asthma. Eur. Respir. J., 22: 613-618.

Lehrer, P.M., S.M. Hochron, T. Mayne, S. Isenberg and V. Carlson *et al*., 1997. Relaxation and music therapies for asthma among patients prestabilized on asthma medication. J. Behav. Med., 17: 1-24.

Maher Loughnan, G.P., N. MacDonald and A.A. Mason, 1962. Controlled trial of hypnosis in the symptomatic treatment of asthma. Br. Med. J., 2: 371-376.

Manocha, R., 2003. Sahaja yoga in asthma. Thorax, 58: 825-826.

Richardson, P.L., P. Lozano, E. McCauley, T. Bush and W. Katon, 2006. Asthma symptom burden: Relationship to asthma severity and anxiety and depression symptoms. Pediatrics, 118: 1042-1051.

Ritz, T. and A. Steptone, 2000. Emotion and pulmonary function in asthma: Reactivity in the field and relationship with laboratory induction of emotion. Psychosom. Med., 62: 808-815.

Sandberg, S., J. Paton and S. Ahola, 2000. The role of acute and chronic stress in asthma attacks in children. Lancet, 356: 982-987.

Woodcock, A.A., E.R. Gross and D.M. Geddes, 1981. Drug treatment of breathlessness: Contrasting effects of diazepam and promethazine in pink puffers. Br. Med. J., 283: 343-346.

Yehuda, R., M.H. Teicher and R.L. Trestman, 1996. Cortisol regulation in posttraumatic stress disorder and major depression: A chronobiological analysis. Biol. Psychiatry, 40: 79-88.