

Effect of Massage Therapy on Children with Asthma

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Abstract

Objective: Asthma is the most common chronic illness in childhood and despite significant improvements for disease control and development of many different drugs, its prevalence is increasing worldwide. Recently, the use of complementary and alternative medicine (CAM) in treatment of many diseases is increasing. The aim of this study was to investigate the effect of massage therapy on children with asthma.

Material & Methods: In this work, 44 asthmatic children aged 5 to 14 years were studied in the allergy and asthma clinic. The samples were chosen randomly divided into two groups. The first group received massage therapy the second group received routine therapy and care (control group). Parents in the massage group were instructed and asked to conduct a 20 minutes child massage every night at bedtime for one month. The massage involved stroking and kneading motions in face, head, neck, shoulders, arms, hands, legs, feet and back. Data was collected through interview and spirometry measurements. The control group received only standard asthma therapy for one month. A spirometry along with exercise was done in both groups at baseline. A one month ambulatory observation followed. Descriptive and inferential statistics were used to analyze the findings.

Findings: There was a statistically significant difference in mean spirometric indexes in massage group at baseline and after one month follow up [forced vital capacity (FVC) with ($P=0.05$) Forced expiratory volume in 1 second (FEV1) with ($P=0.02$) and FEV1 after exercise with ($P=0.0005$). Indeed; there is significant difference between mean changes of FVC (2-1) with ($P=0.05$) and FEV1 (2-1) in two groups with ($P=0.04$).

Conclusion: According to the obtained results, daily massage can improve airway tonicity, decrease airway sensitivity, and better control of asthma. Applying this method can decline the use of non reasonable drugs and can be considered as a complementary method to pharmaceutical methods.

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Introduction

Asthma is the most common chronic illness in childhood and the greatest cause of disability in children alone^[1]. Worldwide, childhood asthma appears to be increasing in prevalence despite considerable improvements in our management and pharmacopoeia to treat asthma. Asthma prevalence is expected to be twice in 2020^[2,3]. The results of studies in Iran showed that in average 5-7 percent of population suffers from asthma and this rate approaches to about 10-15 percent in children^[4].

Asthma imposes numerous economic burdens on families and communities, so economic expenses due to asthma and its treatment is increasing. Moreover, expenditures burdened to asthmatic patients at the time of hospitalization, using drugs of asthma, loss of parents' jobs and absence of children from school are important for community^[5]. Children's health care and other care providers who have direct contact with asthmatic children are looking for strategies to provide well-being and suitable care for children.

Recently, complementary and alternative medicine (CAM) therapies are one of the strategies used along with conventional pharmacological therapies for many diseases which have been effective in many cases; massage therapy is a part of complementary therapies^[6]. Results of Field et al study which examined the effects of massage therapy on pulmonary function in children showed that massage therapy can be an effective intervention in treatment of childhood asthma attacks. Their results also indicated improved pulmonary function by massaging^[7]. Another study with purpose of evaluating the massage therapy by parents on asthmatic children showed that massage has positive effects on symptoms and amount of consumed drugs. The authors suggested further studies with greater samples^[8].

The main purpose of treatment in asthma is allowing the child to have a life with normal pulmonary function. Pulmonary function tests (PFTs) are used to determine asthma severity along with clinical symptoms and medication requirements. Normal lung function is one of the goals of asthma management in international guidelines, which includes forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1), maximal midexpiratory flow rate (MMEF_{25-75%}), FEV1/FVC^[9]. In this study, the researchers tried to use massage therapy along with other conventional clinical therapies for asthma treatment. There are numerous studies about different methods for asthma treatment but a few studies exist about the relationship between asthma and massage. With attention to increased asthma prevalence as a common and chronic illness and its unpleasant outcomes, asthma control is important in prevention of its complications in children. We decided to determine the effect of this unconventional treatment on pulmonary function in asthmatic children.

Material & Methods

This is an experimental study carried out on two groups. The groups consisted of 5-14 year-old asthmatic children who received standard asthma therapy recruited in the allergy and asthma clinic in Alzahra Hospital Isfahan from 03/08/2005 to 06/02/2006. A convince sample of 44 subjects (based on power analysis for a medium effect in pervious studies at a level of .05 and power of 80) meeting the sample criteria and having parental informed consent (additional consent by the child if 7 years or older) was selected for participation in the study (Sampling was done by using convenience method)^[10] And randomly divided into two groups. The sampling

criteria included children aged 5-14 years who had mild or moderate asthma (children who had FEV1 typically decreases during or after exercise by more than 15%)^[2] and children having no other chronic illness except asthma (according to the patients' files), children and parents who are interested in participation. The study exclusion criteria were children who had massage contraindications (edema in massage area, injured tissue, incisions, burns, infectious rash), having contact eye Lenz, using anticoagulation drugs and having fracture in massage area^[11], lack of follow up in treatment with different reasons, new changes in pharmacological treatment programs, severe asthma, other different diseases except asthma, living with adoptive parents, lack of cooperation of parent or child in massaging.

The data was collected using questionnaire (interview and files) and Spirometric measurements.

The subjects in the massage therapy group received a 20-minute massage by their parents just before bed time every night for one month. The parents were given massage instructions by one of the researchers in physician's Office. The massage involved stroking and kneading motions in face, head, neck, shoulders (5 minutes), arms, hands (5 minutes), legs, feet (5 minutes) and back (5 minutes). After education completed, the techniques of massage therapy, performed by mothers were observed and corrected by researchers and at last an education film of massage

therapy (performed by a physiotherapist) was given to children's mother and all of the parents of the studied children were telephoned biweekly by the researcher to check compliance on massage therapy. A base line spirometry evaluation was performed for all patients (control and massage groups) before massage therapy initiation.

Pulmonary function tests were performed on the first and last day of the study with the same spirometer (Geiger, Germany) spirometry with exercise was done by the same person. FVC, FEV1, FEV1/FVC ratio and MMEF_{25-75%} were recorded.

Data was analyzed, SPSS software paired t-test and independent t-test and chi-square were used for data analysis.

Findings

In this research forty four children 5-14 years old with asthma were studied. The results of the study showed that in the both groups the proportion of males was higher than females; there was no significant difference between sexes in the two groups. The majority of patients were less than 7 years old; there was no significant difference in age between the two groups. The results showed that 81.8% of

Table 1- Demographic characteristics, asthma severity and Spirometric indexes mean in massage and control group (first day)

Variable	Massage therapy Group	Control Group	P Value
Age(year) Mean (SD)	6. 8 (2.4)	6.7 (1.9)	>0. 05
Sex	Male	54. 4	>0. 05
	Female	36. 4	

Asthma severity (%)	Mild	54	55	>0.05
	Moderate	46	45	
Spirometric Indexes (First day) Mean (SD)	FVC	89.1 (21.4)	92.8 (14.2)	>0.05
	FEV1	92.5 (19.7)	96.5 (15.2)	
	FEV1a*	74.3 (17.9)	78.5 (17.9)	
	MMEF _{25-75%}	75.51 (31.7)	70.8 (23.5)	

* FEV1 after exercise

Table 2- Spirometric indexes mean in massage and control group (first day and last day)

<i>Variable</i>	Massage therapy Group		p Value	Control Group		p Value
	First day	Last day		First day	Last day	
FVC	89.1 (21.4)	96.3 (14.0)	0.05	92.8 (14.2)	92.5 (16.3)	0.45
FEV1	92.5 (19.7)	102.1 (13.3)	0.02	96.5 (15.2)	96.7 (14.0)	0.46
FEV1a	74.3 (17.9)	93.2 (16.3)	0.0005	78.5 (17.9)	91.9 (17.5)	0.005
MMEF(25-75)	75.5 (31.7)	79.9 (22.1)	0.24	70.8 (23.6)	75.7 (20.8)	0.17

mothers were housekeepers in both groups and 75% have been aged less than 35 years old. There was no significant difference in mean age of mothers between the two groups. There was also no statistical significant difference in spirometric indexes and asthma severity between the two groups before intervention (Table 1).

The results of our study showed that in massage group, there were significant differences in FVC ($P=0.05$) FEV1 ($P=0.02$), and after exercise FEV1 ($P=0.0005$), before and after massage therapy (after intervention) (Table 2).

The results showed that between spirometric indexes of asthmatic children before and after massage therapy in massage group, there was improvement in 4 of 5 indexes in massage group compared with control group (Table 3). Table 4 shows the comparison between mean changes in

spirometric indexes before and after massage therapy in both groups. According to this data, the mean changes in spirometric indexes FVC ($P=0.05$) and FEV1 ($P=0.04$) in massage group are significant. There was no significant difference in other indexes.

Discussion

In this study it is shown that massage therapy could improve pulmonary function. The results showed statistically significant differences in FEV1, FVC and post exercise FEV1, before and after massage therapy in massage group. Similar to our results Field et al also had reported the improvement of pulmonary function after massage therapy^[7]. The results of a study on effects of parents' massage on asthma in children less than 18

Table 3- Improved spirometric indexes of the massage therapy group compared with control group (first day and last day)

<i>Spirometric Indexes</i>	Massage therapy Group	Control Group
FVC	8%	-0.3%
FEV1	10.9%	0.2%
FEV1a	25.6%	16.9%
FEV1/FVC	1.4%	0.9%
MMEF (25-75)	5.3%	6.9%

Table 4- Spirometric indexes mean (SD) changes after massage therapy in massage therapy group and control group

<i>Spirometric Indexes</i>	Massage therapy Group	Control Group	P value
FVC(2-1)	7.1(4.2)	-0.3(2.3)	0.05
FEV1(2-1)	9.5(4.5)	0.2(2.7)	0.04
FEV1a+(2-1)	18.9(4.8)	13.3(2.9)	0.16
FEV1/FVC(2-1)	1.5(1.5)	1.0(1.7)	0.42
MMEF _{25-75%} (2-1)	4.3(6.2)	4.9(5.0)	0.46

years old have shown that massage is effective in symptoms, severity and reducing needs to asthma medicines^[8]. Hernandez et al found that massage therapy increases the peak of expiratory flow in patients with cystic fibrosis after one month^[12]. The results of a study by Beeken et al showed that neuromuscular release massage therapy (NRMT) in patients with chronic obstructive lung disease (COLD) had an increase in thoracic gas volume, forced peak expiratory flow and FVC. The patients had significant changes in heart rate, peripheral blood oxygen saturation and breath holding time^[13].

In this study, there was an increase in FVC after one month. The results of Hiss and Cox study on immediate effects of foot massage in patients at ICUs showed that 5-minute foot massage is effective in improving the heart rate, respiratory rate, mean arterial pressure and peripheral blood oxygen saturation^[14].

In our study the massage group had also an improved pulmonary function compared with control group. In our study, the massage group has improved spirometric indexes compared with control group. In a study conducted by Bingel et al the pulmonary function (PEF, FEV1, FVC and

MMEF (25-75)) had been improved by pulmonary rehabilitation programs and there was no significant difference in symptoms, quality of life and pulmonary function tests in control group. The Bingel study showed that rehabilitation programs can improve pulmonary function and quality of life in children^[15]. Perlman et al in a study on 17 children with asthma evaluated the influence of hypnotherapy on pulmonary function. They measured pulmonary function indexes at baseline, immediately after and 2-weeks following the hypnotherapy, their results showed higher mean values for FVC (50%) after hypnotherapy^[16]. In our study, the increase in FVC was significant too. In this study, the mean changes in spirometric indexes before and after intervention between the two groups showed statistically significant differences in FVC and FEV1 but other indexes had no significant differences.

The results of Zhu et al study on clinical evaluation of massage for prevention and treatment of respiratory infection recurrence in children after 3 and 6 months showed that there are significant differences in all immune indexes in massage group ($P < 0.01$). They concluded that massage is helpful in community health promotion, increased immune function, prevention and treatment of respiratory infection recurrence in children and is effective in health care^[17]. The results of the study conducted by Vang et al showed significant decrease in respiratory rate, and Maa et al reported similar findings^[18,19]. In our study, the asthmatic children who received massage had greater improvement in pulmonary function tests.

Conclusion

The results of this study showed that the massage therapy affects pulmonary function tests. So, massage therapy along with standard treatment is better than standard

therapy alone in children with asthma. According to obtained results, daily massage may cause improved airway tonicity, decreased airway sensitivity and better asthma management. With respect to side effects of drugs and its financial burden, the parents can be trained to apply massage techniques themselves for their child.

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