

Review

Behavioural interventions as aids for asthmatic patients: a review

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Introduction

Asthma was once considered a primary example of a somatoform disease in which psychological variables play a major role in the etiology and symptoms. Over the past few decades, however, research in medical and psychopathological fields has challenged old concepts.

Some studies have found that psychological factors play no part in the etiology of asthma nor do they alter the pathological pulmonary function to the level of cure or sustained relief. The precipitation of asthmatic episodes by the introduction of stressful stimuli in the laboratory has remained inconclusive. Psychotherapeutic interventions have also failed to prove their efficacy in curing asthma or to irreversibly change pulmonary abnormalities. Given this, the role of behaviour therapy in the treatment of asthma needs to be evaluated.

Clinical observations have demonstrated that behaviour interventions deal exclusively with the sequelae of asthmatic episodes rather than with their etiology. Deconditioning therapies have proved effective in treating asthma but not in altering lung function.

Definition of asthma

Numerous attempts have been made to define asthma over the past 2 decades. The

following definition has been proposed by the National Heart, Lung and Blood Institute of the United States of America (USA):

Asthma is a lung disease manifested symptomatologically with airway obstruction that is reversible (although incomplete in some patients) either spontaneously or with treatment; airway inflammation; and airway hyperresponsiveness [1].

Epidemiology

In the past 2 decades the prevalence, mortality and morbidity of asthma in the USA have increased; conservative estimates indicate 10–15 million individuals with asthma there. Approximately 80 million Americans suffer from a chronic respiratory disease [1]. Furthermore, the rate of asthma morbidity in the USA as estimated by the Centers for Disease Control and Prevention, Atlanta increased 45% from 1.3 per 100 000 to 1.9 per 100 000 between 1980 and 1990 [2].

Nosology

There are two types of bronchial asthma: extrinsic asthma and intrinsic asthma [3]. Extrinsic asthma, also called allergic asthma, usually affects children and young adults. Family history often reveals positive skin tests, a favourable response to hy-

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posensitization, IgE association and acute attacks. Usually prognosis is self-limited and death is rare.

Intrinsic asthma, also called infective asthma, usually develops in adults over the age of 35 years. Infections rather than allergic noxious agents play a significant role in the etiology of this sort of asthma. Usually there is no family history, attacks are related to infections, exercise and stress and there is no history of eczema in childhood. Skin tests are usually negative. There is an unfavourable response to hyposensitization and IgE is not associated. Attacks are more fulminant, prognosis is poorer and death may occur.

The common clinical features of both types include: respiratory distress, dyspnoea, wheezing, flushing, cyanosis and cough, flaring of alveoli, use of accessory respiratory muscles, apprehension, tachycardia, hyperresonance, distant breath sounds and eosinophilia.

There are sub-types of asthma. Mixed asthma refers to a combination of allergic and infective asthma. Status asthmaticus is characterized by a severe clinical state of airway obstruction. It is refractory to conventional therapy and necessitates immediate medical intervention because of the danger of respiratory acidosis caused by hyperventilation [4].

Psychological aspects of asthma

Medically, asthma is viewed as an immunological disorder which interacts with psychosomatic medicine. Psychoanalytic theory has failed to present a rationale for the psychological variables of asthma. Furthermore, there are conflicting views on the precise role of the various emotional states

responsible for eliciting an asthmatic response. On one extreme, asthma is considered entirely a psychosomatic disorder. Others view it as a psychological disturbance stemming from the outcome of a pulmonary functional flare-up.

Although psychological variables may play a role in provoking or worsening the asthmatic episode, the psychosomatic explanation of asthma is not based on verifiable evidence. This unsubstantiated explanation may therefore mislead both lay people and physicians [5].

Psychological factors which may contribute to asthmatic symptoms

Family factors

Data over the past 3 decades reveal the role of familial psychosocial factors in inducing asthmatic disorders among vulnerable children. Doctors have also noted certain asthmatic children whose symptoms improved markedly or remitted when isolated from a stressful familial milieu. In 1960, Peshkin [6] noted that removal from the family benefited asthmatic children by altering the physical rather than the emotional environment. Further studies showed that emotional factors were responsible for a certain amount of pulmonary variance in a few cases [7].

Personality factors

Research which focused on the identification of the role of personality patterns in inducing asthmatic episodes has been less successful [8]. In the past there were claims of specific neurotic tendencies which characterized asthmatic patients, such as dependency, hypersensitivity and aggression. The latest comparative studies, however,

have indicated that personality variety among asthmatics may be attributed to the morbidity itself [9].

Psychological variables

Studies of psychological variables provide more encouraging findings. Self-reports and clinical observations have confirmed that asthmatic patients are vulnerable to paroxysmal attacks due to emotional overtones, such as anxiety or stress. In such studies asthmatic episodes have been triggered by applying emotional stressors, such as exposure to disturbing films or the influence of fear-inducing hypnotic suggestions. These stressors presumably elicited biophysical changes in respiratory function [10].

Why do emotional arousals, which stimulate the sympathetic system, produce bronchospasm? This system stimulates beta-adrenergic receptors in the bronchi, which should in fact produce a bronchodilator effect. In 1976, Knapp suggested a possible explanation that an adrenergic shortcoming may be involved in the mechanism [11].

Some asthmatics produce less than normal levels of epinephrine when emotionally aroused. Recent research has focused on controlling the function of respiratory airways in various psychological ways, namely relaxation, hypnotic suggestion, meditation and placebo. Experiments have shown the inhalation of aerosolized saline, which is a bronchodilator agent, could produce bronchoconstriction in sensitive subjects who were concomitantly subjected to a hypnotic suggestion [12].

Role of classical conditioning and learning

A hundred years ago, Mackenzile gave an example of the role of learning and classical conditioning in inducing bronchospasm responses in certain asthmatics [13]. He de-

scribed a woman who developed wheezing at the sight of a rose paper beneath glass.

There is no clear experimental evidence documenting the role of classical conditioning in eliciting asthmatic responses. Although it might be possible in certain subjects to create conditioned asthmatic responses by stimulating visual and olfactory senses repeatedly with pollen, this kind of conditioning is not always valid. Fears and phobias may be adapted to enhance the effect of the applied stimulus. Conditioned responses, however, tend to diminish or disappear rapidly if the conditioning stimuli are not continually paired with the original stimulus [14]. Data suggest that conditioned bronchospasm or dilation is likely to develop only infrequently.

Behavioural approaches in asthma therapy

In order to deal effectively with untoward consequences of asthma, two specialists should be involved in the management of this condition: the physician and the behavioural therapist.

Three distinct behavioural approaches are usually considered in management. Abnormal pulmonary function must be modified. Untoward emotional disturbances must be changed. Maladaptive asthma related to inconsistent family behaviours must be altered. Five approaches can be used to achieve this: relaxation training, biofeedback, operant conditioning, systematic desensitization and self-management.

Relaxation training

The results of research on the effectiveness of relaxation in the relief of pulmonary dysfunction are conflicting. A peak expiratory flow rate meter was used as a measure of improvement of lung function in controlled

studies [15]. The results revealed the failure of subjects to produce a significant relationship between sitting quietly and the relaxation response.

Yet in another controlled study, 22 children who received 30-minute sessions of relaxation training 3 times weekly were compared with a control group of 22 children who received no relaxation training [16]. The children who received the relaxation regimen showed statistically significant progress as measured by forced expiratory volume (FEV).

Biofeedback

Bozzay reported an illustrative serious asthmatic child case treated by galvanic skin response, TEMP and training. His aim was to teach the child to manage asthmatic episodes alone. This was done by training the child to relax in order to dampen the concomitant emotional overtones resulting from annoying environmental and family stimuli. The findings showed his wheezing subsided and breathing became smoother and easier within 15 minutes of the onset of attacks [17]. Nevertheless, biofeedback has yet to be adopted as a dependable therapeutic approach because of the expense of the equipment and the lack of zeal shown by researchers [18].

Systematic desensitization

Emotional overtone is presumed to be a catalyst in triggering asthmatic attacks. Consequently, instituting systematic desensitization could be of therapeutic value in aborting resultant anxiety which complicates the asthma attack [19]. Some subjects have been trained successfully with systematic desensitization, assertiveness training and progressive relaxation. These subjects have reported a dramatic improvement in controlling the emotional upset caused by exogenous noxious stimuli [19].

Operant conditioning

Positive reinforcement in some experimental cases has succeeded in increasing FEV. Khan and colleagues [20] reported this result from their experimental study of 10 asthmatic children. In contrast to this, in 1975 Danker and colleagues found no increase in FEV using contingency tools [21]. From these studies we can conclude that systematic desensitization in association with the relaxation response could suppress concomitant emotional upset induced by the asthmatic attack and the related pernicious feedback which aggravates asthmatic symptoms.

To deal with maladaptive asthma-related behaviours exhibited by some patients, such as malingering, various secondary gains from the illness and inadequate social behaviours, the implementation of certain measures could result in the effective management of asthmatics, especially children. Positive reinforcement could teach the young child how to use appropriately and effectively the FEV device, although exaggerated reinforcement over a long period could diminish its worth. This technique does not alleviate asthma severity but helps to eliminate maladaptive secondary gains the patient acquires from the illness.

Learned maladaptive habit response can be eliminated if it is not reinforced [22]. Therefore, parents should not pay too much attention to the frequency of a child's cough which is used to obtain attention and sympathy. Parents might use the time-out procedure to eliminate undesirable learned responses.

Self-management

The aim of a self-management programme is to educate clients to achieve "self-initiated skills and competence" in order that they might work effectively with relevant professionals to manage their condition.

The client should learn three techniques. First, the asthmatic must integrate medical and behavioural knowledge with personal factors such as abilities, experiences and expectations regarding asthma control. Second, learned skills should be used to control asthmatic episodes, most notably problem-solving techniques should be used to resolve stress-inducing issues. Third, the client should learn stress inoculation training, or to cope positively with external stressors [23].

Conclusion and comments

There has been controversial debate about psychological interventions for treating asthma. Some theories based on clinical and experimental information reject the existence of psychological variables in asthma, claiming that this condition is purely an organic abnormality. Previous theories claimed the contrary, that asthma is a psychosomatic disturbance. These conflicting

views reflect the need for further studies to judge the role of emotional disturbances and personality composition in asthma.

Another important issue regarding asthma is the use of behavioural treatments. Such treatments used in many clinical and controlled studies have focused on children and they have contributed considerably to relieving the concomitant emotional overtone suffered when airways are obstructed during an asthmatic attack. Nevertheless, the studies have not had reliable outcomes and have not produced irrefutable evidence that behavioural therapy can work in cases of asthma, especially for children.

The notion that asthma is mediated by an emotional catalyst is accepted by the majority of clinicians including the author of this article. The equating of breathing with autonomy is indelibly impressed on the body. According to Poldinger, breathing reflects the emotional and affective process [24]. Bratigna suggests that asthma attacks are not only a matter of air confinement but can be emotion and feeling as well [25].

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