

Psychological Defenses and Coping Styles in Patients Following a Life-Threatening Attack of Asthma*

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Twenty-five patients who have suffered a near miss asthma death (NMAD) have undergone a comprehensive psychiatric evaluation on average 13 months following this event. Forty percent of the patients were judged to have psychiatric disorders at the time of assessment. All patients had very high levels of denial and following the NMAD, patients appeared to either decompensate psychiatrically, usually exhibiting symptoms of anxiety disorders, or further increase their levels of denial. Those patients who had psychiatric illnesses at the time of the study were more constitutionally vulnerable towards developing these disorders and had a reduced perception of their quality of life compared with the patients who increased their levels of

denial following the NMAD. The effects of the NMAD on patients and their families ranged from mutual anger and anxiety, although the anger was often repressed, to mutual overinvolvement and overdependence. The presence of high levels of denial of asthma and a history of psychiatric illness in the patient appear to be factors that may increase the likelihood of death from asthma.

(*Chest* 1989; 95:1298-1303)

NMAD = near miss asthma death; GHQ = general health questionnaire

Paterson and Musk¹ have noted the trend of increasing asthma mortality rates in Australia. Of particular concern is the apparent increase in mortality rates in male patients aged less than 34 years, and the evidence that there are higher mortality rates from asthma in Australia and New Zealand compared with other westernized countries, although it has been noted that most of the recent increase in rates in Australia is related to changed death certification practices in elderly patients.²

The psychological defenses used in patients with asthma have been well described in the literature. Dirks et al³ have defined three types of coping style. These consist of, first, an appropriate adaptive response to asthma management; second, the use of "hopeless dependency" on physicians and hospital services; and third, "inappropriate excessive independence." This third defensive style, which is related to patients' high use of denial of their illness, and of the need for compliance with medication, has been noted to lead to excessive hospitalization rates.⁴

There are few papers in the literature that have commented on psychological issues in patients with life-threatening asthma. Strunk et al,⁵ in a well-conducted case controlled study of 21 children with

severe asthma who died of asthma following discharge from hospital, found that psychological risk factors "were prominent in severely asthmatic children who subsequently died of asthma." The psychological risk factors that were identified in this study included disregard of asthmatic symptoms, depressive symptoms, conflicts between the patient's parents and hospital staff regarding the medical management of the patient and self-care of asthma while in hospital that was not appropriate for age. Rae et al,⁶ in a case control study of deaths from asthma in New Zealand adults, identified a variety of factors that delineated patients with asthma who are at high risk of death. Among these factors was noncompliance with medication, which it is reasonable to assume would be increased in patients who deny their illness excessively, as well as the presence of overt psychosocial problems. Yellowlees et al⁷ compared the psychiatric status of 13 patients who had suffered a near miss asthma death with 36 patients with asthma who had not experienced such an episode and found few differences between the groups. Both groups did, however, show higher than expected levels of psychiatric morbidity, severe lifestyle and social restrictions, and an unexpectedly high compliance with prescribed medication.

This report is a detailed analysis of the psychiatric disorders seen in, and the coping styles used by, patients who have suffered a life-threatening attack of asthma. It was hypothesized that these patients would have a high rate of psychiatric disorders related to the life-threatening nature of their chronic disease, and also significant levels of anxiety and disturbance within

*From the Departments of Psychiatry and Respiratory Medicine, Flinders Medical Centre, Bedford Park, South Australia. Read before the Thoracic Society of Australia Annual Meeting, Sydney, Australia, May 1988. This study was supported by grants from the Flinders Medical Center Research Foundation and the Asthma Foundation of Australia.

Manuscript received July 13; revision accepted October 11.
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their families. It was also predicted that the levels of denial employed by these patients would not be excessively high because it was assumed that the experience of having had a near miss asthma death, and the consequences of this, would make patients less able to deny their illness and its implications.

PATIENTS AND METHODS

Flinders Medical Center is a 500-bed teaching hospital in Adelaide, South Australia. For the purposes of this study, asthma was defined by a history of variable cough, wheeze, and dyspnea, with measured increased bronchial responsiveness to inhaled histamine, or a 20 percent increase in forced expiratory volume in one second spontaneously or in response to inhaled bronchodilator agents. The Respiratory Unit is following those patients who have suffered a near miss asthma death. The NMAD has been defined as an episode of severe acute asthma with respiratory failure and/or an altered state of consciousness. Patients who survive such a life-threatening episode of asthma are, if they wish, reviewed monthly by a respiratory physician for at least one year. All patients being followed in this way and all other patients who have suffered a NMAD and have been admitted to Flinders Medical Center within the past three years were contacted and asked to take part in this study. Only three patients who were able to be contacted refused to take part. A cohort of 25 patients out of a possible 28 has consequently been obtained.

The patients all underwent the same psychiatric and psychological assessment process, and this has been described in detail elsewhere.⁷ Each patient underwent about five hours of psychiatric and psychological assessment which included a detailed clinical interview and allocation of a psychiatric diagnosis, if appropriate, using DSM-III criteria,⁸ two structured interviews, one of which was developed specifically for this study while the other consisted of the Diagnostic Interview Schedule,⁹ as well as the completion of a variety of questionnaires. These questionnaires included the Eysenck Personality Inventory,¹⁰ the General Health Questionnaire,¹¹ the Middlesex Hospital Questionnaire,¹² the Asthma Symptom Checklist,¹³ the Illness Behaviour Questionnaire,¹⁴ and the Quality of Life Index.¹⁵ The questionnaires were specifically chosen to help delineate further the presence and type of psychiatric disorders seen in this physically ill population, as well as to look at their coping and adaptive styles in relation to their illness. All the questionnaires have been validated and been found to be reliable in clinical use. Statistical analyses were performed on a personal computer.

RESULTS

The 25 patients were comprised of 19 women and six men. Their mean age was 35.7 years (range 18 to 68, standard deviation 13.3). The mean age of the men was 39.5 years (range 18 to 68, standard deviation 18.8) and the women was 34.4 years (range 19 to 57, standard deviation 11.1). Seven patients were single and 18 were married or in de facto relationships. The study interviews took place in the outpatient setting on average 13 months following the NMAD (range 1 to 58 months), and all patients were medically stable at the time of interview.

All patients had comprehensive respiratory function tests performed which confirmed the diagnosis of asthma. These will be reported separately. The average age of the patients at the time of their diagnosis of

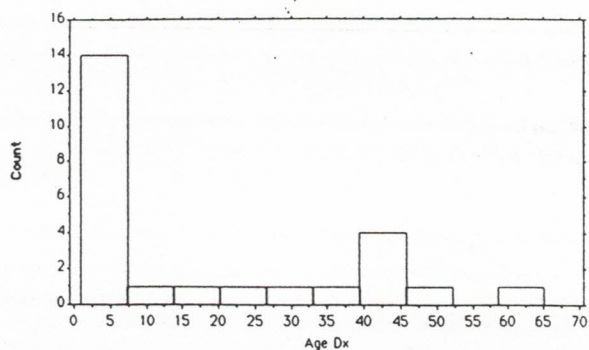


FIGURE 1. Age of NMAD patients at diagnosis of asthma.

asthma was 17 years but more than one half of them were diagnosed in early childhood (Fig 1).

The patients were, on average, 34 years old at the time of their NMAD, but there was a wide distribution of ages (Fig 2).

Nineteen of the 25 patients had less than ten hospital admissions in their lifetime for asthma and in four patients, the near miss asthma death was their first hospitalization. Six patients had multiple admissions including four patients who had had about 100 admissions each during their lives. The distribution of these results makes the average for each patient of 22 admissions for asthma before their near miss death of little significance. Eight patients had suffered previous near miss death experiences from asthma, and one patient had a total of six of these experiences. Seventeen of the patients had a positive family history of asthma in a first degree relative, five a positive family psychiatric history in a first degree relative, and seven patients had seen a psychiatrist themselves at some stage before the index NMAD. One other patient had treatment for a posttraumatic stress disorder following her NMAD before partaking in this study.

Ten of the 25 patients were allocated a DSM III psychiatric diagnosis at the time of clinical interview by one of us (PMY). Nine of these diagnoses were anxiety disorders with seven patients suffering from panic disorders and two from posttraumatic stress disorders. One patient was diagnosed as suffering from a major depressive illness. One other patient, while

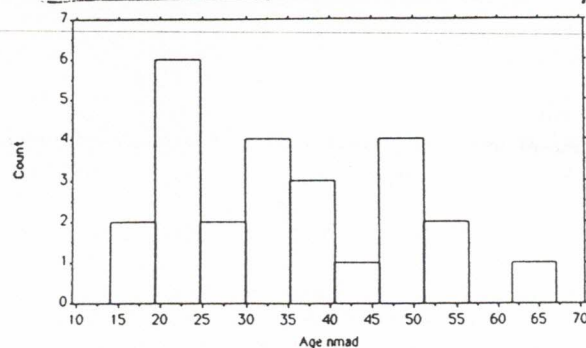


FIGURE 2. Age of NMAD patients at NMAD.

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presenting with symptoms suggestive of a posttraumatic stress disorder, had evidence of hypoxic brain damage that had occurred during her NMAD and which was confirmed on formal neuropsychologic testing. This patient has consequently not been included as a psychiatric case in this analysis.

Denial was measured on two scales given to the patients. The nine item lie scale on the Eysenck Personality Inventory was scored in a manner suggesting high levels of denial "faking good" or illness minimization.^{16,17} The NMAD patients had a mean score of 4.6 (range 2 to 9; standard deviation 2.1) which was greater than normal control subjects who averaged 2.3¹⁰ ($p < 0.05$) and greater than a group of 36 age- and sex-matched patients with asthma who had not had a NMAD⁷ who averaged 3.7 (range 1 to 8; standard deviation 1.8) ($p < 0.05$). The five item denial scale on the Illness Behaviour Questionnaire showed a mean score of 3.8 (range 1 to 5; standard deviation 1.4) for the NMAD patients which was significantly higher than seen in the control asthma patients⁷ (mean 3.2; range 0 to 5; standard deviation 1.2) ($p < 0.05$), in control psychiatric patients¹⁴ (mean 2.4; standard deviation 1.7) ($p < 0.001$), and in general practice patients¹⁴ (mean 2.9; standard deviation 1.7) ($p < 0.01$).

Table 1 shows the results of the questionnaire data that are significantly different ($p < 0.05$) between the group of ten patients diagnosed as having a psychiatric disorder and the 15 patients who were not so diagnosed.

It can be seen that the psychiatrically diagnosed patients score higher on the GHQ and MHQ which are scores of "psychiatric caseness," perceive themselves as having a lower quality of life on the QL Index, have more symptoms of hyperventilation/hypocapnia on the Asthma Symptom Checklist and much lower levels of denial on the IBQ denial scale. Of interest, also, were the EPI Lie Scale results where the psychiatrically diagnosed patients scored an average of 3.9 and the nondiagnosed patients an average

of 5.0. This trend did not, however, reach significance ($p = 0.2$).

The psychiatrically diagnosed patients also had significantly more frequently a positive past psychiatric history and family psychiatric history. Seven of these ten patients had psychiatric treatment or assessment prior to their NMAD, whereas none of the 15 nondiagnosed patients had undergone this. Three of these patients had been assessed clinically by the author prior to their NMAD. Of these three patients, one had longstanding bulimia, another had a generalized anxiety disorder, while the third displayed abnormal illness behavior and had a borderline personality disorder. The four patients not seen by the author reported that they had been treated for, respectively, depression with ECT, depression with psychotherapy, an anxiety disorder, and alcohol abuse. One of the other three psychiatric cases also had a positive family psychiatric history, her mother having been treated for a severe postpartum depressive illness.

There were no significant differences between the groups of diagnosed and undiagnosed patients on a variety of other medical and epidemiologic parameters, although there was a trend for the psychiatrically diagnosed patients to appear to be somewhat more chronically ill, having been younger when their asthma was diagnosed, having had asthma for longer periods of time before their NMAD, and having had more hospital admissions before this event.

Physiologic data on these patients will be reported separately. Early analysis of these data, however, suggests that the psychiatrically diagnosed NMAD patients tended to have similar or slightly better lung function than the nonpsychiatrically diagnosed patients refuting the impression that this group was actually more severely medically impaired and that this factor might have been related to their psychiatric decompensation.

DISCUSSION

The major finding of this study is that the psychiatric and psychological profiles of the group of patients who have suffered a NMAD are most unusual. The prediction that they would not have particularly high levels of denial because of the consequences of their NMAD has not been upheld. Instead, what has been found is that while the patients as a whole have very high levels of denial anyway, they seem to respond psychologically to the NMAD by either decompensating psychiatrically and developing symptoms of anxiety, or by increasing their levels of denial even further.

Denial is a normal coping mechanism in response to adversity and is usually adaptive. Increased levels of denial are likely to be helpful in allowing patients to cope with chronic illnesses yet retain a normal social facade, and in our culture where abnormal physical

Table 1—Differences in Questionnaire Results Between Psychiatrically Diagnosed (10) and Nondiagnosed (15) NMAD Patients

	Diagnosed Patients	Undiagnosed Patients	p Value
GHQ	6.6 (6.0)	2.6 (3.4)	0.04
MHQ	33.0 (13.8)	22.3 (9.9)	0.03
Q-L Index	7.4 (2.4)	9.1 (1.3)	0.04
ASC-Hyperventilation/hypocapnia	1.9 (0.8)	1.2 (0.3)	0.01
IBQ Denial	2.8 (1.6)	4.5 (0.6)	0.001
Past psychiatric history	+ve	-ve	0.001
Family psychiatric history	+ve	-ve	0.04

NB SD in brackets

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 IBQ DENIAL

	NMAD	Cont	Cont
	Psy Dx	Asth	non
	4.5	3.2	2.4
	2.8		

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appearance or function is heavily stigmatized, an increased amount of denial is probably essential to allow patients with asthma to cope and feel relatively normal. Denial is also increased in situations of constant loss, and clearly asthma is associated with losses particularly in health and self-esteem, and is also commonly used as a defense against fear, anxiety, and depression. The NMAD patients confirm this latter point quite clearly with the non-psychiatrically diagnosed patients having much higher levels of denial than the patients with psychiatric disorders.

The psychiatric disorders seen in the NMAD patients were primarily anxiety disorders. This is something that has been seen in previous studies of patients with chronic respiratory disease¹⁸ where a variety of mechanisms were proposed that would tend to lead to the evolution of symptoms of anxiety. The high prevalence of anxiety disorders is important clinically because, as has previously been discussed,¹⁹ hyperventilation and panic may be misconstrued as being indicative of a worsening of the patient's respiratory disorder. The dosages of asthma medications may then be increased, which in the case of methylxanthines and B₂ adrenergic agonists, is actually likely to physiologically make patients more agitated and anxious. A recent discussion has postulated a physiologic link between depression and death from asthma via cholinergic pathways.²⁰ It is possible that these pathways may be similarly involved in the etiology of the anxiety disorders seen in the patients described in this study, as it is well known that there are significant physiologic and psychological interactions and overlaps between anxiety and depression.

It is interesting that the two questionnaire scores of "psychiatric caseness" employed in this study, the General Health Questionnaire and the Middlesex Hospital Questionnaire, both scored more highly in the psychiatrically diagnosed patients than in the nondiagnosed patients. This obviously provides validation of the clinical diagnoses. The GHQ, however, when it is used in patients who are medically ill to attempt to define "psychiatric caseness," usually has a cut off score of 11 to 12,²¹ and if one were to use this score with the 25 NMAD patients, then only three of them would be diagnosed as having a psychiatric disorder on the GHQ. The high levels of denial and "faking good" seen in the NMAD patients, however, suggest that if this particular scale is used with these patients, it would be more appropriate to use a lower cut off point for "psychiatric caseness." Clearly, if physicians are to employ scales such as these to detect psychiatric disorder, then certainly in the patients described in this study, cut off scores would have to be lower than usually recommended.

The Asthma Symptom Checklist Hyperventilation/Hypocapnia scale was significantly higher in the psy-

chiatrically diagnosed patients than in the nondiagnosed patients which is another indicator of the link between anxiety, hyperventilation, and altered medical status in patients with respiratory disease.¹⁹

The finding that patients who decompensate psychiatrically following the NMAD have higher levels of psychiatric illness in their family and in their past, than the patients who increase their levels of denial is understandable. It has been demonstrated that patients who develop psychiatric disorders after any disaster, and the South Australian bushfires are a good local example of this,²² tend to be premorbidly or constitutionally more at risk of developing such disorders. An obvious simple way that clinicians can use to help them predict how individual patients will cope following the medical disaster of a NMAD is to take note of the patient's family and past psychiatric history to see if there is an increased constitutional risk of developing psychiatric disorders. It is worth noting that the seven patients with a positive past psychiatric history had a wide range of psychiatric disorders before the NMAD but tended to decompensate following the NMAD with symptoms of anxiety. This may be a reflection of their understandable fear and anxiety, but may also be related to the fact that as they have asthma, they are therefore more at risk of developing symptoms related to the chest such as hyperventilation which is also well known to be causally connected with anxiety and panic attacks.

The majority of the patients seen in this study were also interviewed with one or more members of their family. Chronic illnesses inevitably affect families, and chronic illnesses that occur in conjunction with life-threatening sudden exacerbations, cause considerable anxiety and anger, particularly when the patients themselves respond by denying their illness. Families of NMAD patients have often been with the patient while they were severely ill and have seen the effects of the patient's asthma. This is in contrast, of course, to the patient who is often amnesic for the bulk of the near miss event itself. Several of the NMAD patients described in this study suffered significant family upheavals following their discharge from hospital with their families wanting to overprotect them, while they preferred to minimize their illness, with resultant anxiety and anger on all sides. Anger tended to be repressed by the family for fear of upsetting the patient and exacerbating their asthma. One married woman found herself in a position of reverse caring for her young children who refused absolutely for some six months following their mother's NMAD to go to sleep before they knew that she was asleep. This was because her NMAD had taken place soon after the children had gone to bed. They had been awakened by the sound of resuscitation attempts in the corridor outside their room and had emerged to dis-

cover their mother, to their perception, blue and dead. A reverse situation occurred in the family of an adolescent who suffered a NMAD where an intense preoccupation developed within his family about his health leading to him becoming socially disabled because of the lack of independence that was granted to him. An interesting common effect on patients who were married was that their marital relationship improved following the NMAD with both partners becoming more aware of their mortality and their feelings towards each other. This was shown in an odd way by one husband of a female NMAD patient who stopped physically abusing her so frequently following her NMAD. She reported that,

"he joked to me that he'd tried rubbing me out and starting again and that it hadn't worked. He has been less violent since the attack. He plays with me now by twisting my arm up my back as a joke rather than by badly bruising me."

The issue of family conflicts was one of the four psychological risk factors identified by Strunk et al⁵ in children. Although the population studied here is very different from that reported by Strunk, in that they are adults who survived a life-threatening attack of asthma, rather than children who succumbed to one, some parallels in terms of risk of death from asthma can be drawn. Apart from the issues of family conflicts, these relate mainly to the high denial seen in adult asthmatics and the "disregard of asthmatic symptoms" seen in children, as well as the presence of psychiatric illness seen in both groups, a variety of disorders prior to the NMAD in adults, and "depressive symptoms" in children. From this study, there is little doubt that high denial of asthma and the presence of psychiatric illness may be risk factors that are likely to increase the risk of death in asthma, while the issue of disturbed family relationships is less certain as several of these situations appeared to have arisen at least partly as a result of the effect of the NMAD in the family.

The psychiatrically diagnosed NMAD patients, interestingly, had a significantly increased perception of their level of disability as measured on the QL Index, despite the fact that their level of impairment from asthma was probably similar to the non-diagnosed patients. It is impossible to say whether the addition of a psychiatric illness led to a reduced perception of quality of life or whether the high denial levels of the nonpsychiatrically diagnosed patients led to a relatively increased perception of quality of life. This is an issue that is clearly important to elucidate further in the future, because both asthma and psychiatric disorders can lead to reduced perception of the level of quality of life. With respect to clinical treatment, it would be useful to know whether patients are functioning at a worse level than they might wish for physiologic or psychological reasons, or for a combination of both.

There are various methodologic criticisms of this study, the major one of which is that it is retrospective. Given that asthma is a very common disorder and life-threatening asthma is relatively uncommon, it is not practicable to mount such a study as this in a prospective manner. Considerable effort has been made to validate the clinical psychiatric diagnoses as comprehensively as possible, and this has been discussed elsewhere.⁷ The significantly elevated scores of the GHQ and the MHQ in the psychiatrically diagnosed patients vs the nonpsychiatrically diagnosed patients are further validation of the accuracy of the clinical groupings. Psychiatric disorders are episodic in nature, and the patients in this study were seen on one occasion only an average of 13 months following their NMAD. The patients are being followed up both medically and psychiatrically as part of a longitudinal study, and it is hoped that this longitudinal data will allow increased confidence about the prevalence rates of psychiatric disorders following NMADs.

The results of this descriptive study have important clinical implications. First, a higher than usual level of denial is probably normal and adaptive in asthma. This may be increased following a NMAD or may be a risk factor for a NMAD, and this clearly needs further investigation. Second, high denial and the presence of psychiatric disorder is probably the worst combination, and psychiatric referral would seem appropriate. Clinicians should routinely make a note of their patients' past and family psychiatric histories to help predict the patients' future style of coping. Third, clinicians have to be aware of the need to compromise in these high risk patients between attempting to modify excessively high levels of denial seen in these patients while trying to minimize the risk of psychiatric decompensation with its potential for increased anxiety and dependence. Lifestyle and attitude changes which allow patients to manage chronic illnesses well, yet remain socially relatively normal, need further investigation. Fourth, the evidence is strong that NMAD patients minimize their symptoms and are consequently unreliable historians. Just as a single peak flow reading is known to be unreliable in asthma, so is a single history. The need for a corroborative history from a close family member is essential to allow accurate clinical assessment of asthma severity in this high risk group. In this study, interviewing patients with their relatives has led to, in several cases, the discovery that patients were engaging in certain high risk behaviors that they had not told their treating physicians about, and which were endangering them. Finally, treating patients with chronic illnesses like asthma will be greatly helped by family involvement in the therapeutic process. This is likely to both reduce family tensions at home leading to less conflict and more appropriate management of asthma, as well

as to give the treating clinician a more accurate perception of levels of disability suffered by their patient.

ACKNOWLEDGMENTS: Professor Ross Kalucy and Dr. John Alpers gave advice and assistance, Mr. Nicholas Potts and Miss Susan Haynes helped with interviewing, Miss Joylene Eden rendered statistical assistance, and Miss Gwyn Jones gave secretarial expertise.

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