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The Cardiac Anxiety Syndrome—a Subtype of Panic Attacks

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Summary. Cardiac anxiety syndrome and the diagnosis of cardiac neurosis respectively are characterized by panic attacks. Panic attacks are the core syndrome of a validated anxiety disorder (panic disorder). The purpose of this study was to investigate if the cardiac anxiety syndrome represents a separate disorder or if it is only a subtype of panic attacks.

In a sample of 122 patients with panic attacks, all patients with a cardiac anxiety syndrome were selected (n = 31). Furthermore, parallel to this group—matched in the variables age and sex—a second group of patients with no cardiac anxiety syndrome was selected. There were no significant differences in course; in clinical phenomenology, patients with a cardiac anxiety syndrome were only distinguished by a greater intensity of somatization and phobic avoidance from patients with no cardiac anxiety syndrome. These results confirm the hypothesis that the cardiac anxiety syndrome is a subtype of panic attacks and does not represent a separate disorder.

Key words: Anxiety neurosis – Cardiac neurosis – Phobia – Depression – Panic attacks – Classification

Introduction

The condition of cardiac anxiety syndrome (in German known as Herzangstsyndrom) is characterized by a variety of cardiovascular complaints together with anxiety attacks and the fear of dying of heart disease. The terms "cardiac phobia" (Herzphobie) and "cardiac neurosis" (Herzneurose) are used for patients with a cardiac anxiety syndrome not due to an endogenous depression or another psychotic disorder [2, 13, 17, 19, 22] whereas functional cardiovascular symptoms associated with the fear of suffering from an undiagnosed cardiac disease are classified as cardiac hypochondriasis (Herzhypochondrie) [13]. A number of investigations [17, 19, 20, 22, 29] have been concerned with the symptoms and psychodynamics of cardiac anxiety syndrome (as well as cardiac neurosis and cardiac phobia respectively) emphasizing anxiety attacks as one of the most prominent features.

Sudden discrete episodes of anxiety (anxiety attacks, panic attacks) were described by Freud in 1896 [7] and were delimitated by Klein in 1964 [16] as a homogenous subclass of anxiety disorders. The present relevance of panic attacks is based on two important findings: (a) panic attacks can be provoked by the infusion of sodium lactate [18] in the majority of patients suffering from these attacks but not in a majority of normal controls. (b) Panic attacks but not a syndrome of generalized anxiety can be treated efficaciously with imipramine [16, 32].

According to the Diagnostic and Statistical Manual of Mental disorders, 3rd Edition (DSM III) [6] the ICD-9 [5] diagnosis of anxiety neurosis is replaced by the diagnoses "panic disorder" and "generalized anxiety disorder". Previous diagnostic labels such as "Da Costa" or "Effort Syndrome" and "Neurocirculatory Asthenia" [3, 31], stressing the importance of cardiovascular symptoms have lost importance in modern psychiatry.

Panic attacks and cardiac anxiety syndrome are likewise characterized by discrete episodes of intense anxiety. To date there has been no clarification whether the syndrome of cardiac anxiety has to be regarded as a distinct disorder, different from panic attacks with other features (as endogenous depression and schizophrenia are distinct entities) or whether it is merely a subtype of panic disorder (such as the retarded or agitated subtype of endogenous depression). In order to answer this question, we followed the criteria of Robins and Guze [24] and Spitzer and Endicott [28], who stated that two clinical syndromes have to be looked upon as distinct disorders when there is a difference in at least one of the following validation criteria: clinical phenomenology, course, family pattern, treatment response or etiology.

The present study tests the hypothesis that cardiac anxiety syndrome constitutes a distinct disorder. In order to examine this issue, we asked the following question: is there a difference between patients with panic attacks and a simultaneous cardiac anxiety syndrome and patients with panic attacks but no cardiac anxiety with regard to one of the validation criteria: sociodemographic characteristics, prevalence of associated syndromes, severity and course (age of onset, prevalence of chronicity)? To achieve a balanced sample, we studied inpatients and outpatients.

For the classification of cardiac anxiety, there is no agreement on obligatory criteria in the literature. Therefore we decided on a narrow concept of cardiac anxiety which would not be contrary to previous investigations. Multiple criteria for the presence of cardiac anxiety, all of which have to be met, are listed in Table 1.

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Table 1. Diagnostic criteria for the syndrome of cardiac anxiety (all of the criteria have to be met)

A.	Fear of dying of a cardiac disorder;
B.	Frequent occurrence of palpitations or tachycardia;
C.	History of at least three panic attacks within a 3-week period (as defined by DSM III) with the following symptoms appearing during an attack:
	C1. cardiovascular sensations (tachycardia);
	C2. fear of dying;
	C3. discrete periods (attacks in which most of the symptoms are experienced within 10 min of the beginning of the attack)
	C4. at least some of the attacks have been unexpected.

Methods

1. Subjects

For sample selection we cooperated closely with the private practices of two general practitioners, two internists and three psychiatrists in the city of Mainz and with three outpatient departments of the university hospital in Mainz (cardiology, psychotherapy, psychiatry). Patients who were treated within a 3-month period either by the agencies mentioned above as outpatients or as inpatients by the psychiatric department at the university hospital of Mainz have been included. They were included in the sample if they reported at least one discrete period of apprehension or fear within the previous 3 weeks. Cases of acute and chronic organic diseases relating to internal medicine as well as cerebral dysfunctions which might have been responsible for causing the psychiatric symptoms have been excluded from our present study. The total sample included 122 patients.

2. Assessments

For further investigation, each of the 122 patients was evaluated by two independent raters twice within a certain week by means of two different diagnostic interviews. All of the participating raters ($n = 5$) had completed special training to ensure reliability before the study began.

First Rating

On the first appointment, an extended version of the structured interview "National Institute of Mental Health Diagnostic Interview Schedule" (DIS) [25] was carried out. In addition, the patients were rated on scales for the measurement of anxiety (Hamilton Anxiety Scale, HAMA) [12], depression (Hamilton Depression Scale, HAMD) [11], (Bech-Rafaelson Melancholia Scale) [1] and for the severity of social impairment (Global Assessment Scale, GAS) [28].

Second Rating

In a second session, an extended version of the Structured Clinical Interview for DSM III (SCID-UP) [27] was administered as well as the severity ratings mentioned above. After completing the first rating, each patient filled in a Syndrome Check List (SCL 90-R) [5] and the cardiac anxiety scale (CAS) [15].

Following a polydiagnostic approach, patients were classified according to Feighner criteria [8] in the second rating. In addition, a scale developed by Gurney et al. [9] for the distinction between anxiety and depression was used.

Diagnostic Assessment (ICD-9)

Diagnoses according to ICD-9 [4] were made by the treating physician who remained blind to the results of the structured interviews.

3. Selection of Patients

Out of the 122 patients originally screened, those subjects who had not suffered from a spontaneous panic attack (defined by DSM III criteria) within the previous 3 weeks were excluded, together with those subjects with no history of an episode with at least three panic attacks within a 3-week period. Furthermore, all patients were excluded from further analysis who suffered from present or past schizophrenia, schizophreniform disorder, schizoaffective disorder, or major depressive episode with melancholia (defined according to DSM III or RDC respectively). Diagnoses were made with the aid of the structured interviews.

4. Group Formation

Out of the remaining 97 patients, all subjects with a cardiac anxiety syndrome were selected. For diagnosing "cardiac anxiety syndrome", all criteria listed in Table 1 had to be met. Criteria A and B were patient rated on a special self-rating scale (CAS) as well as physician rated by means of structured questions, the physician being blind to the results of the self-rating. The CAS was designed for the assessment of the cardiac anxiety syndrome and is of sufficient reliability and validity [15]. The other items were taken from the section on panic disorder—first rating. All patients with contradictory statements in the self-rating and the standardized questioning were excluded from further analysis ($n = 2$). In the group of patients with no cardiac anxiety syndrome, all subjects were excluded who either reported cardiophobia (i.e., fear of dying of a cardiac disorder, $n = 4$) or cardiac hypochondriasis (i.e., the belief of suffering from an undiagnosed cardiac disorder, $n = 11$). In the remaining group of patients without cardiac anxiety syndrome, each patient was matched by sex and age (age $\pm$ 2.5 years) to a patient with cardiac anxiety syndrome. Thus it was possible to contrast patients with cardiac anxiety ($n = 31$) in a matched pairs group with controls suffering from panic attacks without cardiac anxiety ($n = 31$).

5. Analysis

Whereas the presence and absence of panic attacks and cardiac anxiety syndrome were assessed by data from the first rating based on DIS, the further symptomatology and clinical features, data on course and physician rated scales were taken from the second rating based on SCID. All anxiety disorders, obsessive compulsive disorders and affective disorders were classified according to DSM III criteria and were diagnosed by means of the respective sections in the structured clinical interview for DSM III (SCID). Alcohol and drugs dependence (DSM III criteria) were diagnosed by means of the DIS administered in the first rating.

In order to evaluate course, patients were classified as suffering from "chronic anxiety" or "chronic depression" respectively. For a "chronic syndrome", essential symptoms had to

be present over a 2-year period without complete remission for the 2 following months or longer. This procedure is in accordance with psychiatric convention. "Chronic depression" was defined by positive criteria of dysthymic disorder (DSM III) neglecting exclusion criteria with a duration over the previous 2 years. Although an agreement on "chronic anxiety" has not been reached yet, in this paper, "chronic anxiety" was defined by positive criteria of generalized anxiety disorder (DSM III) with a duration of 2 years neglecting exclusion criteria.

Results

1. Sociodemographic Variables

Patients with a cardiac anxiety syndrome (n = 31) did not differ significantly with regard to age at the time of the study (mean age 41.5 years) and with regard to sex ratio (23 female, 8 male patients) from the total population of patients with panic attacks but without cardiac anxiety (n = 66) from which subjects were selected to form matched pairs. When comparing the group of patients with cardiac anxiety (n = 31) with a group of matched patients without cardiac axiety, no differences were found with regard to age at index examination, sex ratio (since both these variables were selection criteria for the control group) and with regard to age at onset of panic attacks (with at least three panic attacks within a 3-week period). In each group, 19 patients were married, 6 patients separated, divorced, or widowed, and 6 patients had never married.

2. Diagnostic Classification

By means of ICD classification, the group of patients with panic attacks and cardiac anxiety appeared to be more homogeneous and more often received a diagnosis of anxiety neurosis than the control group (Table 2).

According to DSM III, almost all patients could be classified as anxiety disorders; in the group of patients with cardiac anxiety, the remaining subjects received a diagnosis of somatization disorder (DSM III) whereas in the control group for the remaining subjects a diagnosis of either major depressive episode (DSM III) or obsessive compulsive disorder (DMS III) was given (see Table 3).

By means of Feighner criteria, a diagnosis from the section on anxiety disorders (anxiety neurosis, phobic neurosis) was more often given to patients with cardiac anxiety than to patients in the control group (see Table 2); however, these diagnostic criteria were rather narrow (requiring at least six panic attacks within 6 weeks, enduring nervousness, onset of disorder before age 40, duration of illness of at least 2 years; in addition, all other mental disorders have to be excluded); therefore, in both groups, only a minority of patients was classified as anxiety neurosis or phobic neurosis respectively.

With the discriminating index (Gurney et al.) relating patients either to a syndrome of anxiety or a depressive syndrome, in both groups, at least 80% of the patients were classed in the anxiety syndrome group (see Table 2).

Patients with cardiac anxiety more often received a DSM III diagnosis of panic disorder or agoraphobia with panic attacks, although this did not reach statistical significance ($P >$ 0.10 Mann-Whitney U-test) (Table 3).

Table 2. ICD-9 diagnoses: comparison between groups (panic attacks with cardiac anxiety syndrome, panic attacks without cardiac anxiety syndrome)

	Panic attacks with cardiac anxiety syndrome	Panic attacks without cardiac anxiety syndrome
ICD 300.0 (Anxiety states)	17	7**
ICD 300.1 (Hysteria)	2	2
ICD 300.4 (Neurotic depression)	8	6
ICD 301.x (Personality disorder)	1	2
ICD 307.x (Special symptoms) and syndromes not elsewhere classified)	1	2
ICD 308.x (Acute reaction to stress)	0	1
ICD 303 (Alcohol dependence syndrome)	2	4
ICD 296.x (Affective psychosis)	0	4
No ICD-9 diagnosis	0	3
Total	31	31

*,** Significant differences (McNemar test, P = 0.05; P = 0.01)

Table 3. Diagnostic classification (DSM III, Feighner Criteria, Gurney) for groups (panic attacks with cardiac anxiety syndrome, panic attacks without cardiac anxiety syndrome)

	Panic attacks with cardiac anxiety syndrome	Panic attacks without cardiac anxiety syndrome
DSM III Anxiety disorders:		
Panic disorder or agoraphobia with panic attacks	29	22
Anxiety disorders according to Feighner criteria:		
Anxiety neurosis	6	2
Phobic disorder	10	7
Classification according to Gurney scale:		
Anxiety	28	25
Depression	2	5
Not classified	1	1

No significant differences between groups (McNemar test, P = 0.05, P = 0.01)

3. Group Comparison with Regard to Panic Related Symptoms

The number of panic attacks during the worst week as well as during the last week before index interview was lower for patients with cardiac anxiety (P = 0.05 respectively 0.09) (Table 4).

Looking at the symptoms experienced during panic attacks, the following significant differences between groups were found: patients with cardiac anxiety more often experienced dyspnea (P = 0.03), choking (P = 0.02), chest pain (P = 0.03) and paraesthesia (P = 0.02); palpitations were more often reported in patients with cardiac anxiety (P = 0.01) as was expected because of the selection criteria for this group. With regard to the remaining symptoms listed in DSM

Table 4. Severity of symptoms related to panic attacks. Comparison between groups (panic attacks with cardiac anxiety syndrome, panic attacks without cardiac anxiety syndrome)

		Panic attacks with cardiac anxiety syndrome	Panic attacks without cardiac anxiety syndrome
Number of attacks	worst week	7.8	11.4
	last week	3.7	4.5
Number of symptoms during worst attack ($n = 14$)		10.4	7.9**
Anticipatory anxiety (last week)		32.6	13.5**
Avoidance behavior		17/31	14/31

*,** Significant differences (Wilcoxon test, McNemar test, $P = 0.05$, $P = 0.01$)

Table 5. Associated disorders, comparison between groups

	Panic attacks with cardiac anxiety syndrome	Panic attacks without cardiac anxiety syndrome
Agoraphobia	14	7*
Social phobia	6	1*
Simple phobia	3	4
Obsessive compulsive disorder	3	3
Generalized anxiety syndrome (neglecting DSM III exclusion criteria)	21	16
Major depressive episode (present)	10	16
Primary (in relation to panic attacks)	2	7
Secondary (in relation to panic attacks) Major depressive episode (present or past)	13	9
Dysthymic disorder or cyclotymic disorder	4	4
Somatization disorder	5	1
Abuse, dependence	4	4

* Significant difference (McNemar test, $P = 0.05$)

III for panic attacks, no significant differences between the two groups were found ($P = 0.05$).

4. *Group Comparison with Regard to Symptoms Experienced Outside of Panic Attacks*

Patients with cardiac anxiety reported that they spent a high percentage of time expecting further panic attacks during the weeks before the index interview (anticipatory anxiety) (Table 4). The number of patients with an avoidance behavior irrespective of the degree of impairment (avoiding places and situation associated with a possible occurrence of panic attacks) did not significantly differ between the two groups (Table 4).

However, patients with cardiac anxiety significantly more often received a diagnosis of agoraphobia (DSM III) and social phobia (DSM III) than patients without cardiac anxiety (Table 5). The presence of both these disorders was not associated ($P > 0.10$ Mann-Whitney U-test) with the duration of the syndrome (age at index interview minus age at onset with at least three panic attacks within a 3-week period).

The two groups of patients did not differ in the frequency of generalized anxiety syndrome (defined according to DSM III with disregard to the exclusion criteria) (Table 5).

In the group of patients with cardiac anxiety there was a moderate tendency which was, however, nonsignificant for fewer depressive syndromes (that is, major depressive episodes according to DSM III) at the time of the study and during the history of the patient ($P = 0.10$ respectively 0.09). In this group patients with cardiac anxiety primary depressive syndromes occurring before or simultaneously with the onset of panic were less frequent ($P = 0.06$) (Table 5); whereas depressive syndromes occurring after the onset of panic attacks (secondary major depressive episode) were more frequent ($P = 0.08$) (Table 5).

Somatization disorder, a valid subtype of hysteria, was found more often in patients with cardiac anxiety ($P = 0.07$), although this was only a tendency. No relevant differences between the groups were found for the occurrence of obsessive compulsive disorders or abuse (alcohol, drugs) diagnosed by means of DSM III criteria.

Both groups did not differ with regard to the following symptoms associated with a depressive syndrome (DSM III symptoms for dysthymic disorder) ($P > 0.10$): insomnia or hypersomnia, low energy, feelings of inadequacy, decreased effectiveness, decreased attention, social withdrawal, loss of interest, restriction of involvement in pleasurable activities, feeling slowed down, being less talkative, pessimistic attitude, tearfulness. However, in patients with cardiac anxiety, enduring recurrent thoughts of death or suicidal ideation was significantly more frequent ($P = 0.03$); this difference could be expected because of the selection criteria for cardiac anxiety (fear of death).

Of the 31 patients with cardiac anxiety 21 (68%) reported hypochondrial complaints; 7 of the 31 patients with cardiac anxiety (23%) stated a strong belief that they were suffering from an undiagnosed cardiac disorder responsible for their symptoms; whereas a separate group of 14 patients with cardiac anxiety (45%) considered it the possibility of suffering from an undiagnosed cardiac disorder. Patients with these hypochondriacal complaints showed a longer duration of illness (age at index interview minus age at onset with a least three panic attacks within a 3-week period) than patients with panic attacks but without hypochondrial complaints (Mann-Whitney U-test, $P = 0.03$). In the group of patients without cardiac anxiety the presence of hypochondrial complaints concerning the heart was excluded by means of the selection criteria.

The severity of symptoms outside panic attacks was rated by means of several assessment scales. On the subscale for somatic anxiety (HAMA), the subscale "somatization" (SCL 90-R) and the subscale for "phobic anxiety" (SCL 90-R) patients with panic attacks and cardiac anxiety were found to score significantly higher (Table 6). In all other observer assessment scales and subscales of self-rating (SCL 90-R) there were no relevant differences between groups; the general symptomatic index (GSI) for the SCL 90-R was significantly higher for subjects with cardiac anxiety. On global assessment of social impairment (GAS) there was no significant difference between groups (Table 6).

Table 6. Severity of enduring symptoms. Comparison between groups (panic attacks with cardiac anxiety syndrome, panic attacks without cardiac anxiety syndrome)

	Panic attacks with cardiac anxiety syndrome	Panic attacks without cardiac anxiety syndrome
Observer rating		
HAMD (depression)	14.7	14.4
Melancholia scale	10.8	11.1
HAMA 1 (somatic anxiety)	10.6	6.8*
HAMA 2 (psychotic anxiety)	10.6	9.9
GAS	64.0	60.1
Self-rating (SLC 90-R)		
Somatization	1.56	0.84**
Obsessive-compulsive	1.34	1.20
Interpersonal sensitivity	1.49	1.09
Depression	1.37	1.30
Anxiety	1.80	1.45
Anger, hostility	0.93	0.80
Phobic anxiety	1.70	1.00*
Paranoid ideation	0.95	0.97

*,** Significant differences (Wilcoxon test, $P = 0.05$, $P = 0.01$)

Table 7. Chronic syndromes (duration—2 years or more). Comparison between groups (panic attacks with cardiac anxiety syndrome, panic attacks without cardiac anxiety syndrome)

	Panic attacks with cardiac anxiety syndrome	Panic attacks without cardiac anxiety syndrome
Chronic anxiety	11	7
Secondary to panic attacks	5	3
Chronic depression	6	6
Secondary to panic attacks	6	3

No significant differences (McNemar test, $P = 0.05$, $P = 0.01$)

5. Chronicity

By means of a retrospective study, no relevant differences between the two groups could be demonstrated ($P > 0.10$): 6 of the 31 patients (19%) in either group suffered from a chronic depressive syndrome. Of the 31 patients with panic attacks and cardiac anxiety 11 (35%) suffered from chronic anxiety at the time of the study (Table 7).

Patients with panic attacks but without cardiac anxiety tended to be hospitalized more often: 21 of the 31 patients without cardiac anxiety (68%) and 13 of 31 patients with cardiac anxiety (41%) had been inpatients in a psychiatric or psychosomatic clinic at least once before the time of the study (McNemar test, $P = 0.07$).

Discussion

Out of a sample of patients with at least three panic attacks within a 3-week period sometime during their life and with at least one panic attack within the previous 3 weeks 31% suffered from a cardiac anxiety syndrome. Since patients with endogenous depression, schizoaffective psychosis, or schizophrenia were excluced, those cardiac anxiety syndromes were classified as „cardiac neurosis" or "cardiac phobia" respectively [18]. Similar to the total sample, there was a marked female preponderance in the group of patients with both panic attacks and cardiac anxiety (sex ratio 3:1). In previous studies on cardiac anxiety syndrome, there was either a slight majority of female patients [28] or a slight majority of male patients [2, 17, 22], but recruitment for these studies was not carried out in order to ensure a representative sample. The age at onset of panic attacks did not differ between the two groups compared. Both age at onset as well as the sex ratio for both groups were comparable to data from epidemiological studies on patients with panic disorder DSM III [21].

Patients with panic attacks and cardiac anxiety did not differ significantly with regard to the frequency of enduring present anxiety syndromes (generalized anxiety symptoms, DSM III) from patients with panic attacks but without cardiac anxiety. But both groups differed with regard to the quality of anxiety; patients with cardiac anxiety showed a higher tendency to somatization, they scored higher in the respective subscales of the HAMA (somatic anxiety) and in the SCL 90-R. Furthermore, there was an increased anticipatory anxiety. These findings illustrate a more intense somatic expression of the anxiety with an emphasis on perceiving the symptoms as a vital threat in patients with panic attacks and cardiac anxiety.

The two groups compared in this study did not differ with regard to the number of patients with an avoidance behavior (neglecting the degree of impairment) but they differed with respect to the intensity of the avoidance pattern: patients with panic attacks and cardiac anxiety scored higher on the subscale of phobic avoidance and they more often suffered from agoraphobia (DSM III) and social phobia (DSM III). Agoraphobia manifested itself in 50% of the patients with panic attacks and cardiac anxiety which is in accordance with the literature [18]. Social phobia occurred in 25% of the patients with cardiac anxiety; the frequency of this disorder in these patients has not been reported elsewhere. Patients with cardiac anxiety reported a smaller number of attacks during the worst and during the last week before index interview. Therefore, the manifestation of intensive phobic avoidance (agoraphobia, social phobia) and of anticipatory anxiety was not to be interpreted as being due to the number of attacks but should be regarded as a consequence of the perceived vital threat (the criterion "fear of dying during an attack" and the continuous fear of dying of a cardiac disorder had been mandatory for the assignment to the group of cardiac anxiety).

Of the patients with panic attacks and cardiac anxiety 50% simultaneously experienced cardiophobic complaints; 25% of the patients were strongly convinced that they suffered from an undiagnosed cardiac disorder. This conviction was associated with a longer duration of the syndrome and might be a secondary cognitive mechanism for adjustment [2].

The two compared groups did not differ significantly with respect to the frequency of either major depressive episodes (DSM III), dysthymic disorder (DSM III) or cyclothymic disorder (DSM III) at the time of the indexd interview. Likewise, there was no relevant difference in the severity of depressive symptoms (physician rating, self-rating). However, in the history of patients without cardiac anxiety, a major depressive episode was more often manifest before the onset of panic attacks, whereas patients with cardiac anxiety more often had a major depressive episode secondary to the manifestation of panic. So, the hypothesis, stated by Richter [22], that depres-

sion is less frequent in patients with cardiac neurosis is not clearly supported by our data.

With respect to the frequency of chronic anxiety and chronic depression there was no significant difference between the two groups, indicating that there was no relevant difference in course (rate of chronicity). Information about course was collected by means of structured interviews and can be regarded as sufficiently reliable, although retrospective data collection is inferior to prospective trials.

Although the group of patients with panic attacks and cardiac anxiety did not differ from the group of patients with panic attacks but without cardiac anxiety with regard to the validation criteria of sociodemographic characteristics (sex ratio, family state), course (chronicity, age at onset of symptoms), associated syndromes (affective disorders, obsessive compulsive disorders, abuse) and cross-sectional psychopathology (depression or depressiveness, psychic anxiety), differences were found with respect to the intensity of associated phobic syndromes, the intensity of somatic anxiety and of anticipatory anxiety. These differences can be interpreted as a function of the intensified vital threat during an attack of cardiac anxiety. Therefore, these attacks can be regarded as a subtype of panic attacks which are merely characterized by cardiovascular symptoms and in consequence by a more intense avoidance behavior. Besides this quantitative difference, a qualitative difference in clinical phenomenology was not seen. Not all the relevant validation criteria for differentiation between patients with panic attacks with or without cardiac anxiety could be tested (e.g., family pattern, treatment response). Data from this study demonstrates that patients with cardiac anxiety do not differ significantly with regard to the validation criteria course and clinical features from patients with other forms of panic attacks. Further studies will be necessary to clarify the issue of validity of cardiac anxiety syndrome.

According to our results, cardiac anxiety or cardiophobia are not distinct disorders but merely a subtype of panic attacks. Since imipramine is regarded as efficacious pharmacotherapy for patients with panic attacks, patients with panic attacks and cardiac anxiety should be treated with this substance. In the literature until now there have been no findings demonstrating a lesser efficacy of this treatment in patients with panic attacks and cardiac anxiety. Psychotherapy (above all behavior therapy) is regarded as a successful means for the reduction of avoidance behavior. Therefore, in patients with panic attacks and cardiac anxiety, because of the intense avoidance pattern, a combination with imipramine treatment is indicated.

Patients with merely hypochondriacal symptoms concerning the heart who do not suffer from anxiety attacks with a fear of cardiac arrest have not been studied in this investigation. No data is available on the effectiveness of pharmacotherapy in these patients. Therefore, it is necessary to distinguish between patients with anxiety attacks and patients with an exclusively hypochondriacal syndrome concerning the heart who are classified in DSM III under the section on hypochondriasis. The validity of this procedure to distinguish between patients with panic attacks and cardiac anxiety on the one hand and patients with cardiac hypochondriasis on the other hand has not been empirically tested.

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