A Comparison of Persons With Early- Versus Late-Onset Panic Attacks

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Background: Although some evidence suggests a bimodal age at onset of panic attacks, the literature comparing subjects with early versus late onset is limited. Previous work suggests that people with late-onset panic attacks may have fewer panic symptoms and exhibit less avoidance. This study sought to compare late-onset panic attacks and early-onset panic attacks with regard to (1) comorbidity, (2) health care utilization, and (3) illness behaviors and coping.

Method: This community-based study involved interviewing randomly selected adults for the presence of DSM-III-R panic attacks. If panic attacks were confirmed, subjects were asked questions concerning panic characteristics, psychiatric comorbidity, symptom perceptions, illness attitudes, coping, and family characteristics. Subjects reporting early-onset panic (panic onset < 50 years of age) were compared with those reporting late onset (onset ≥ 50 years of age). Significant univariate analyses were controlled for differences in age, panic duration, and socioeconomic status by using analysis of covariance and logistic regression.

Results: Subjects with late-onset panic attacks (N = 9) utilized the mental health sector less, but were more likely to present to family physicians for their worst panic. Patients with late-onset panic felt that choking and numbness more strongly disrupted function, but felt less strongly that either depersonalization or sweating disrupted function. Subjects with late-onset had fewer comorbid conditions and lower Symptom Checklist-90 scores. Late-onset subjects also had less hypochondriasis and thanatophobia while coping less through avoidance or wishful thinking.

Conclusion: Late-onset panic attacks are associated with less mental health utilization, lower levels of comorbidity, less hypochondriasis, and a greater number of positive coping behaviors.

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The literature on panic attacks in the elderly is limited and focuses on late-onset panic attacks. In fact, is the late-onset distinction a valid one? Although studies of late- versus early-onset panic attacks have used different definitions of *late onset,*[1–3] there is some suggestion of a bimodal distribution in age at onset. In an unpublished community-based study, Marron et al.[4] found the nadir in onset between the ages of 40 and 44 years after a peak in young adulthood and a second peak at age 55 to 59 years. Sheehan et al.[5] found, in patients from a university psychiatry clinic, a discontinuity in rates of onset between ages 37 and 44 years with 8% reporting onset after age 44 years. Using hazard rates, Burke et al.[6] found that onset rates in the community leveled off at 45 to 49 years old. The observation in these studies of discontinuity in onset suggests that there may indeed be a discrete group of subjects with panic of late onset.

Except for case series, studies comparing late-onset and early-onset panic are limited and focus on panic disorder instead of panic attacks, and their criteria for late onset differ. However, some early- versus late-onset differences have been found. One pilot study that compared the phenomenology of early-onset with late-onset panic attacks found that older volunteers from the community who reported onset of panic attacks after age 54 years exhibited fewer panic symptoms. In addition, the older respondents exhibited less avoidance behavior.[1] Differences between late-onset and early-onset panic disorder revealed that the late-onset group of panic disorder patients were more likely to be widowed.[2] Raj et al.[3] found that 60% of elders with panic disorder in a geriatric psychiatry service reported onset after age 60 years. No differences were noted in the prevalences of depression, agoraphobia, or illness phobia. Similarly, 13 elders with panic disorder beginning after age 60 years seen in a department of psychiatry clinic had clinical and demographic profiles similar to those with early onset.[7] Thus, criteria for late-onset panic differ across studies, but early- versus late-onset differences have sometimes been found.

Although some differences have been reported, the characteristics compared to date are limited, are often conflicting, and use arbitrary criteria to define late-onset panic. Hassan and Pollard[7] noted the need for research to determine whether early and late onset in panic disorder subjects are clinically distinct entities, to explain why

panic onset is delayed until older adulthood in late-onset panic, and to determine whether treatment approaches should be different in late-onset versus early-onset panic disorder. The purpose of the present community-based study was to (1) compare the severity of and comorbidity in panic attacks between late- and early-onset respondents, (2) evaluate differences between the 2 groups with regard to their presentation and utilization of health services for panic attacks, and (3) compare the differences in illness behavior and coping strategies between early-onset and late-onset panic patients.

METHOD

The Panic Attack Care-Seeking Threshold (PACT) study was conducted in San Antonio, Tex., utilizing methods similar to those of the Epidemiologic Catchment Area study.[8] Eighteen census tracts were used; the number of subjects interviewed in each tract differed so that the sample would be representative of the U.S. population in age, gender, and race. Because Hispanics form a majority in the San Antonio area, ethnic representativeness was not attempted. After the identification of randomly selected starting points within each tract, clusters of 3 dwellings were selected at intervals of 8. Individuals within the dwelling were randomly selected using the Kish method. Details of the methodology used have been presented elsewhere.[9]

The initial screening consisted of a structured interview using the panic disorder portion of the Structured Clinical Interview of the DSM-III-R (SCID),[10] as well as a demographic information sheet, administered by 1 of 2 trained research assistants. The bilingual lay research assistants were trained in subject recruitment, instrument administration, and application of DSM-III-R criteria. Using volunteers, the research assistants administered the instruments during the supervised training period and interrater reliability comparing the research assistants was assessed using κ statistics and intraclass correlations.

Those subjects meeting DSM-III-R criteria for panic attacks were asked to participate in an extensive interview regarding their access to health care, health care utilization, panic characteristics, coexisting psychiatric problems using the SCID[10] and Symptom Checklist-90 (SCL-90),[11] symptom perceptions using the Symptom Perception Scales,[12] illness attitudes and behaviors using the Illness Attitude Scales[13] and Illness Behavior Questionnaire,[14] family variables using the Family Inventory of Life Events[15] and the Duke Social Support and Stress Scale,[16] and coping using the Ways of Coping Checklist.[17] Subjects were classified as having panic attacks if they had ever experienced unexpected and unexplained discrete periods of intense fear or discomfort consisting of at least 4 panic symptoms. Subjects with panic attacks thus included those with attacks frequent enough to meet DSM-III-R criteria for panic disorder (i.e., 4 attacks in 4 weeks or at least 1 attack with persistent fear), as well as persons with less frequent attacks. Of the 1683 individuals contacted, 1266 (75%) agreed to be screened. Refusal to be screened was not related to age, gender, socioeconomic status, income, education, or language, but was highest in non-Hispanic whites (26.3%) and lowest in Hispanics (12.2%). Of the 1266 screened individuals, 119 (9%) met criteria for panic attacks, and 97 agreed to participate in the long interview. Those agreeing to complete the long interview did not differ from those refusing in terms of language, ethnicity, gender, socioeconomic status, income, education, duration of panic, or phobic avoidance.

Using the change point test, we found a significant ($D = 0.680$, $p \leq .001$) cut point in subjects reporting onset of panic after the age of 46 years; no subjects reported onset between ages 46 and 50. Subjects were considered to have late-onset panic attacks if their first attack occurred at 50 years or older. For this analysis, 9 subjects were identified as having late-onset panic attacks.

Univariate analyses were conducted using chi-square with Yates correction for discontinuity and t testing. Because the 2 groups differed in age, socioeconomic status, and duration of panic, significant univariate analyses were reanalyzed using logistic regression and analysis of covariance (ANCOVA), adjusting for age, socioeconomic status, and panic duration when these variables correlated with the dependent measure. A p value $\leq .05$ was deemed significant. Owing to the large number of univariate analyses, a Bonferroni correction was also calculated ($p \leq .00023$) to adjust for multiple testing.

RESULTS

Demographic data of the subjects participating in this study are presented in Table 1. The overall prevalence of panic attacks in persons 50 years and older was 5.8%, with equal numbers in the early-onset panic attack and late-onset panic attack groups. Two late-onset subjects met criteria for panic disorder (22%) as opposed to 45% (N = 40) in the early-onset group. Among all 97 patients with panic attacks, the most common chronic problems reported were hypertension (N = 10), arthritis (N = 9), diabetes (N = 6), heart disease (N = 6), and allergies (N = 5). No subjects reported Parkinson's disease or a history of cerebrovascular accident, and only 3 reported chronic lung disease (asthma).

Table 2 provides the total health care utilization over a 2-month period in general. The early-onset group presented to more health care sites in general ($t = 2.62$, $p = .012$) and more mental health sites in particular ($t = 4.74$, $p = .0001$) than did the late-onset group. Over a 2-month period, the early-onset group had higher utilization rates in the mental health sector ($t = 3.24$, $p = .0002$).

Table 1. Demographic Characteristics of 97 Subjects With Either Early- or Late-Onset Panic Attacks[a]

Characteristic	EOP Group (N = 88)	LOP Group (N = 9)
Age, mean ± SD, y	36.9 ± 11.2[b,c]	68.6 ± 11.9
Gender, female, N (%)	71 (80.7)	5 (55.6)
Ethnicity/race, N (%)		
Hispanic	49 (55.7)	5 (55.6)
White	26 (29.6)	3 (33.3)
Black	13 (14.8)	1 (11.1)
Marital status, N (%)		
Single	25 (28.4)	1 (11.1)
Married	42 (47.7)	6 (66.7)
Marital loss[d]	21 (23.9)	2 (22.2)
Hollingshead socioeconomic status, mean ± SD	60.9 ± 19.2[e]	78.1 ± 14.4
No. of chronic illnesses, mean ± SD	1.2 ± 1.3	2.0 ± 1.5

[a]Abbreviations: EOP = early-onset panic attacks, LOP = late-onset panic attacks.
[b]t = –8.06, p < .0001.
[c]Significant by Bonferroni correction (p < .00023).
[d]Marital loss = divorced, separated, or widowed.
[e]t = –2.62, p = .0103.

Table 2. Health Care Utilization During 2-Month Period[a]

	Total Utilization[b]					
	EOP Group (N = 88)		LOP Group (N = 9)		Statistics	
Site	Mean	SD	Mean	SD	t	p
Hospital emergency room	0.18	0.56	0.33	0.50	NS	
Minor emergency room	0.06	0.35	0.11	0.33	NS	
Clinic	0.16	0.58	0.00		2.55	.0125
Physician's office						
Family physician	0.58	1.54	1.00	1.32	NS	
Cardiologist	0.14	0.51	0.11	0.33	NS	
Internist	0.06	0.23	0.11	0.33	NS	
Psychiatrist	0.18	0.60	0.00		2.85	.0054
Psychologist	0.18	0.95	0.00		NS	
Social worker	0.06	0.53	0.00		NS	
Ambulance	0.06	0.28	0.11	0.33	NS	

[a]Abbreviations: EOP = early-onset panic attacks, LOP = late-onset panic attacks.
[b]Utilization calculated as number of visits per 2-month period.

Table 3. Comparison of Comorbidity in Subjects With Late- and Early-Onset Panic Attacks[a]

	EOP Group (N = 88)		LOP Group (N = 9)		Statistics	
Disorder	N	%	N	%	χ^2	p
Substance abuse						
Alcohol	30	34.1	1	11.1	NS	
Drugs	16	18.2	0	0	NS	
Phobic avoidance	35	39.8	1	11.1	NS	
Depression	60	68.2	4	44.4	NS	
Obsessive-compulsive disorder	52	59.1	2	22.2	NS	
Social phobia	40	45.5	2	22.2	NS	
Simple phobia	57	64.8	1	11.1	9.78	.002
Generalized anxiety disorder	69	78.4	4	44.4	4.83	.028

[a]Abbreviations: EOP = early-onset panic attacks, LOP = late-onset panic attacks.

Table 4. Psychiatric Symptomatology in Subjects With Late- and Early-Onset Panic Attacks[a]

	Mean Scores		Statistics	
SCL-90 Scale	EOP Group (N = 88)	LOP Group (N = 9)	t or (F)	p
Somatization	1.99	1.68	NS	
Obsessive-compulsive	2.02	1.56	2.35	.030
Interpersonal sensitivity	1.83	0.62	6.92	.0001[b]
Depression	2.10	1.19	2.60	.011
Anger	1.59	0.74	4.20	.0005
Phobic anxiety	1.69	0.60	(10.41)	.0001[c]
Paranoia	1.77	0.79	6.03	.0001[b]
Psychosis	1.36	0.55	4.67	.0002[b]
Anxiety	2.13	1.12	(6.18)	.003[c]

[a]Abbreviations: EOP = early-onset panic attacks, LOP = late-onset panic attacks, SCL-90 = Symptom Checklist-90.
[b]Significant by Bonferroni correction (p ≤ .00023).
[c]Analysis of covariance.

As opposed to the early-onset group, none of the late-onset group presented to a mental health clinic for panic attacks (Fisher exact, p = .042). None of the utilization variables in Table 2 correlated with duration, age, or socioeconomic status. At the time of their worst attacks, 67% (N = 6) of the late-onset respondents considered using a family physician as opposed to 31% (N = 27) of the early-onset group (χ^2 = 4.02, p = .045). More late-onset respondents actually used a family physician than did the early-onset respondents: 33% (N = 3) versus 10% (N = 9; χ^2 = 4.02, p = .045).

Table 3 reveals the comparisons of lifetime comorbidity between the early-onset and late-onset groups. Subjects with "phobic avoidance" avoided situations because of their panic attacks and included those with agoraphobia as well as less severe avoidance. Age, socioeconomic status, and duration of panic were not related to the presence of specific psychiatric disorders. The total number of comorbid psychiatric conditions was greater in the early-onset patients (early-onset mean = 3.75 disorders vs. late-onset mean = 1.56 disorders; t = 4.23, p = .0001). The only SCL-90 scale that failed to reach statistical significance was the somatization scale. In each case, the early-onset group scored higher on each of the scales (Table 4). The late-onset respondents had a shorter duration of panic attacks (mean ± SD = 4.5 ± 5.89 years) versus the early-onset respondents (mean ± SD = 11.84 ± 12.02 years; t = 3.10, p = .007).

The late-onset group experienced less severe panic symptomatology in sweating (ANCOVA F = 5.45, p = .0058). The remainder of symptom severity analyses were not significant. The symptom perceptions in Table 5 describe the patients' perception of the severity of symptoms that required treatment or were disruptive to func-

Table 5. Significant Differences in Symptom Perceptions, Illness Behaviors, and Coping Independent of Age, Socioeconomic Status, and Duration (N = 97)[a]

Measure	Items/ Scale	Mean Score: EOP Group (N = 88)	Mean Score: LOP Group (N = 9)	Statistics: t or (F)	Statistics: p
Symptom perceptions (SPS) (24 scales)[b]					
Unreality needs treatment	1	3.58	5.67	2.34	.0216
Numbness disrupts functionality	1	3.25	1.56	2.11	.0372
Choking disrupts functionality	1	2.27	1.22	3.33	.0023
Unreality disrupts functionality	1	3.42	6.00	2.94	.0041
Sweating disrupts functionality	1	4.41	6.11	2.01	.0477
Illness behaviors and attitudes (17 scales)					
General hypochondriasis (IBQ[c])	9	4.33	1.44	(5.39)	.0061[d]
Whiteley hypochondriasis (IBQ[c])	14	7.51	4.78	2.15	.0341
Thanatophobia (IAS[c])	3	6.08	3.11	2.05	.0436
Coping style (WCCL[c]) (8 scales)					
Wishful thinking	8	2.35	1.75	2.08	.0430
Avoidance	10	1.64	1.25	2.28	.0248

[a]Abbreviations: EOP = early-onset panic attacks, IAS = Illness Attitude Scales, IBQ = Illness Behavior Questionnaire, LOP = late-onset panic attacks, SPS = Symptom Perception Scale, WCCL = Ways of Coping Checklist.
[b]Score of 1 = most severe, 7 = least severe.
[c]Higher score signifies greater severity.
[d]Analysis of covariance.

tioning. In addition, the early-onset group was more likely to believe that hot or cold flashes were severe symptoms ($t = 2.18$, $p = .023$), but indicated that chest pain was a less severe symptom ($t = 2.60$, $p = .013$). The illness behaviors and coping mechanisms exhibited by both the early-onset and late-onset groups can be seen in Table 5. A review of the behaviors and attitudes shows that the late-onset respondents were more likely to report that thanatophobia was not as serious a concern than the early-onset respondents. The late-onset respondents were also less likely to engage in negative coping mechanisms such as wishful thinking and avoidance.

DISCUSSION

This study found that whereas patients with early-onset panic attacks use psychiatrists more, late-onset patients use the general health sector. The high utilization of the general health sector may reflect differences in symptom perceptions, medical morbidity, or likelihood of having a personal physician. Because late-onset patients perceived that somatic symptoms are more likely to be disruptive to functioning, they may tend to seek help from the general health sector. Conversely, because the early-onset patients perceive that psychological symptoms (feelings of unreality) are more likely to need treatment and are disruptive to functioning, they tend to use the mental health sector. In addition, the late-onset group reported having more chronic illnesses than the early-onset group, suggesting that they may tend to attribute their somatic symptoms to one or more of their chronic illnesses. This finding agrees with previous studies suggesting a preference for the general health sector by the elderly.[18]

The severity of panic symptoms as measured by severity of sweating during attacks and psychiatric comorbidity are greater in the early-onset panic attack group. These findings generally agree with the previous studies on late-onset panic disorder.[1,3] This may explain the higher mental health utilization in our early-onset group.

If there is a second peak in panic onset late in life, why might this happen? Previous work suggests that the onset of panic disorder in general is triggered by an object loss,[19] stimulant use,[20] or hormonal imbalance.[19] Although the number of life events prior to panic onset was not increased, those events are more likely to be personal in nature and viewed more negatively.[21] The age at onset correlated with the number of negative events and ratings of positive events.[22] Specific events may include physical illness,[7,22,23] surgery,[3] diagnosis of cancer,[3] financial loss,[3,7] or loss/illness of spouse.[3,7] Late-onset (≥ 65 years old) agoraphobia is more frequently precipitated by a threat to the patient's life than by bereavement or illness.[24] Because the late-onset respondents in this study had fewer life events at the time of their worst attack, were not widowed, and reported lower levels of family stress, an object loss (i.e., death of a spouse, retirement, loss of friends) did not explain the delayed onset of panic attacks in these patients.

Similarly, the lower prevalence of substance abuse in the late-onset group suggests that stimulant use is not likely to be the precipitant event. However, medications could trigger panic onset. The problem of polypharmacy in the elderly raises further possibilities for medication-related induction of panic attacks. Because neuroleptics are frequently used in the elderly and are known to exacerbate panic symptoms, they may be a precipitating factor for panic attacks. This study did not collect data concerning medication use.

Concerning hormonal causes, the female subjects in the late-onset group could be expected to be at high risk for hormonal imbalances such as postmenopausal symptoms and osteoporosis. However, these disorders were not reported by women in this study.

Previous work suggests that most elders with anxiety have psychological causes, but a variety of metabolic, neurologic, cardiac, and pharmacologic disorders can be responsible.[25] Because the locus ceruleus is an important

center in several neurotransmitter pathways and may be important in panic disorder, brain aging processes could be related to late-onset panic despite decreased activity in the locus ceruleus. The onset of panic disorder and agoraphobia in elders has been linked to Parkinson's disease,[26] stroke recovery,[27] and chronic obstructive pulmonary disease,[28] but none of these conditions were prevalent in this study. Consequently, this study cannot explain the etiology of the late-onset attacks in these subjects.

This study revealed that, in general, patients with late-onset panic attacks exhibited more positive illness behaviors, attitudes, and coping strategies than those with early onset. Although previous work failed to find a late- versus early-onset difference in illness phobia,[3] elder subjects with phobias report more hypochondriasis and higher levels of worry, anxiety, and social unease than controls.[23] The fact that symptoms are less severe and comorbidity less frequent in late-onset subjects may explain their positive attitudes. However, conversely, the positive attitudes and coping in the late-onset subjects may explain the lower levels of symptom severity and psychiatric comorbidity. In addition, these lower levels may in themselves suggest why panic attacks did not occur earlier in these patients. Previous studies have noted an association between positive coping strategies and lower levels of anxiety, depression, and phobias in panic disorder patients, whereas negative strategies are associated with higher levels.[29] Coping strategies may lessen or exacerbate the effects of life events.[28]

In general, the results of this study agree with those predicted by the developmental diatheses-stress model.[30] As biological vulnerability in terms of physical illness and changes in neurotransmitter systems increases with age, psychological vulnerability decreases as coping skills and positive illness attitudes improve. However, stressful life events decrease in mid-life, but generally rise later in life. Other than drop in socioeconomic status, increased life events were not observed in this study. Hence, early-onset subjects may develop panic in response to stressful life events during a time of psychological vulnerability. On the other hand, late-onset panic attacks may develop in response to increasing life events and biological vulnerability despite diminished psychological vulnerability.

This study has several limitations. Because of the large portion of Hispanics in our sample, the results may not be generalizable to other populations. Comparison with previous studies is problematic because the study populations differ. This study focused on panic attacks and was not limited to those with panic disorder. However, most of the previous literature focuses on panic disorder. This may limit conclusions about comorbidity, hypochondriasis, poor coping strategies, etc., seen in panic disorder populations. Questions concerning panic onset and health care utilization rely on patient recall, which may be biased. In addition, the number of univariate analyses conducted will increase the alpha level. Finally, the paucity of subjects with late-onset panic attacks lowers the statistical power of these analyses and may lead to a type II error. Although we have attempted to determine whether observed differences were due to the differences in age, duration of panic, or socioeconomic status, early-late differences could still be due to these factors.

In conclusion, late-onset and early-onset subjects differed in psychiatric comorbidity, illness behaviors and coping, and health care utilization. This study should be interpreted with caution, but suggests that late-onset panic attacks represent a less severe disorder and may represent a distinct syndrome. There is clearly a need for further research on the etiology of panic attacks and panic disorder of late onset to improve our understanding of this phenomenon.

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