

Review Paper

Panic in the Emergency Room

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Objective: This paper examines the relation between coronary artery disease (CAD) and panic disorder (PD), discusses the implications of this relation to the general medical system, and suggests future assessment and intervention strategies for emergency departments.

Method: We reviewed the literature on CAD and PD using Medline and PsycINFO.

Results: PD is more expensive to our nonpsychiatric, general medical system than any other psychiatric condition. The main reason for PD patients' continued use of general medicine for their psychological symptoms is that their PD remains undiagnosed. In the emergency room (ER), PD patients with chest pain have their PD go undiagnosed about 98% of the time. By having ERs implement specific assessment and intervention strategies for patients presenting with chest pain, the savings to the general medical system could be substantial.

Conclusions: By improving recognition of PD in the ER, there is the potential to generate large savings in general medical care. With the availability of empirically supported or effective psychological and pharmacologic treatments for PD, appropriately diagnosing and subsequently treating patients with PD may prevent them from experiencing many years of disability and higher rates of fatal coronary events.

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Clinical Implications

- Better diagnosis of panic disorder (PD) will improve cost containment and provide opportunities for cost offset in our health care system.
- Better diagnosis of PD will decrease the risk of fatal coronary events in panic patients with coronary artery disease (CAD).
- This review paper will enhance recognition of PD in general medicine.

Limitations

- There is a relative scarcity of follow-up studies of brief, single-session treatment of PD in the emergency room.
- More research is needed on the increased risk of fatal coronary events in patients with comorbid CAD and PD, and of the research completed to date, more research has been on men than women.
- Canadian research is needed to compute the cost offset of treating PD within our publicly funded medicare system.

Key Words: panic disorder, agoraphobia, coronary artery disease, review, anxiety

Table 1 Prevalence of panic disorder (PD) and coronary artery disease (CAD) in chest pain patients

Investigators	Entire sample	PD	Comorbid PD and CAD	PD without CAD	No PD	CAD without PD	No PD and no CAD
Beitman and others (7)	103	59	16	43	44	14	30
Chernen and others (8)	30	5	2	3	25	16	9
Fleet and others (4)	441	108	25	83	333	49	284
Goldberg and others (9)	310	104	16	88	206	28	178
Kane and others (10)	278	104	33	71	174	35	139
Katon and others (11)	74	15	3	12	59	43	16
Morris and others (12)	128	16	10	6	112	63	49
Totals	1364	411	105	306	953	248	705

Drawing from the databank of the National Institute of Mental Health's epidemiologic study of over 18 000 North American adults, Klerman and colleagues demonstrated that panic disorder (PD) is more expensive to our nonpsychiatric, general medical system than any other psychiatric condition (1). Some of the reasons why PD patients' use of general medical care is so high are 1) 90% of PD patients believe they are suffering from a serious physical disorder, and so seek help in the general medical system; 2) PD symptoms overlap considerably with those of several serious medical conditions, including coronary artery disease (CAD), and this results in frequent (and often repeated) specialty medical investigations (for example, 44% of PD patients are investigated in neurology, 39% in cardiology, and 33% in gastroenterology); and 3) panic attacks are so extraordinarily aversive that sufferers remain extremely motivated to continue to investigate their condition until they get some relief (2). Unfortunately, the evidence reviewed here shows that many PD patients spend years (and often thousands of health care dollars) seeking treatment in general medicine for a condition that can be effectively, and cost-effectively, treated psychologically or psychiatrically.

Given recent concerns regarding health care costs in Canada, reducing health care expenditures has become a priority. In a recent review of the cost-effectiveness of psychological treatments, Hunsley concluded that psychological treatments could reduce health care costs as patients subsequently reduce their utilization of other health care services (3). Given the financial costs to the medical system of patients with PD and the significant distress associated with these symptoms, recognizing these symptoms and applying cost-effective interventions is crucial.

Missed Diagnoses of PD in the Emergency Room (ER)

The primary reason that many PD patients often spend years inappropriately accessing care in the general medical system is that the condition goes unrecognized or undiagnosed.

Understandably, the striking somatic symptoms and intense distress that characterize PD drive the process of repeated medical investigations.

A primary entry portal to general medical treatment for PD patients is the ER, where PD patients frequently present with chest pain and the mistaken belief that they are having a heart attack. In a recent Canadian ER sample of 441 consecutive chest pain presentations, 108 of the 441 met criteria for PD (4). However, the PD diagnosis was missed by the attending ER cardiologist in 106 of the 108 cases, a staggering 98% insensitivity to the diagnosis. Among the implications of this almost complete failure to recognize and diagnose PD was that appropriate referrals to psychological resources were not made for this large group of patients. This is not an isolated finding: in another ER chest pain sample, ER physicians identified only 1 of 30 psychiatric diagnoses (97% insensitivity; the diagnoses were primarily PD, and a few were depression) (5).

Coronary angiography (cardiac catheterization) is the gold standard test for CAD. It is an intrusive test with associated medical risks. Even when chest pain symptoms are so severe and convincing that cardiac catheterization is performed in an attempt to confirm CAD, many of these patients are found to have PD instead of CAD. The latter fact is evident from Table 1, which summarizes the results of 7 of the 8 studies originally compiled by Fleet and colleagues (6) of chest pain patients, with a combined sample size of 1364 (4,7–12). The remaining study is not included here, because its methodology resulted in some empty cells in Table 1. All the patients in the above studies were cardiology outpatients, and most patients had chest pain that was serious and convincing enough that they either underwent cardiac catheterization or a stress test to determine whether they had CAD. Although in clinical practice it is quite rare for chest pain patients presenting to general medical settings to receive psychiatric examination, each patient in these studies did receive assessment to detect possible PD (using either diagnostic interviews or questionnaires). Combined results of the 7 studies are presented graphically in

Figure 1 Percentage of patients presenting with chest pain who have panic disorder or coronary artery disease

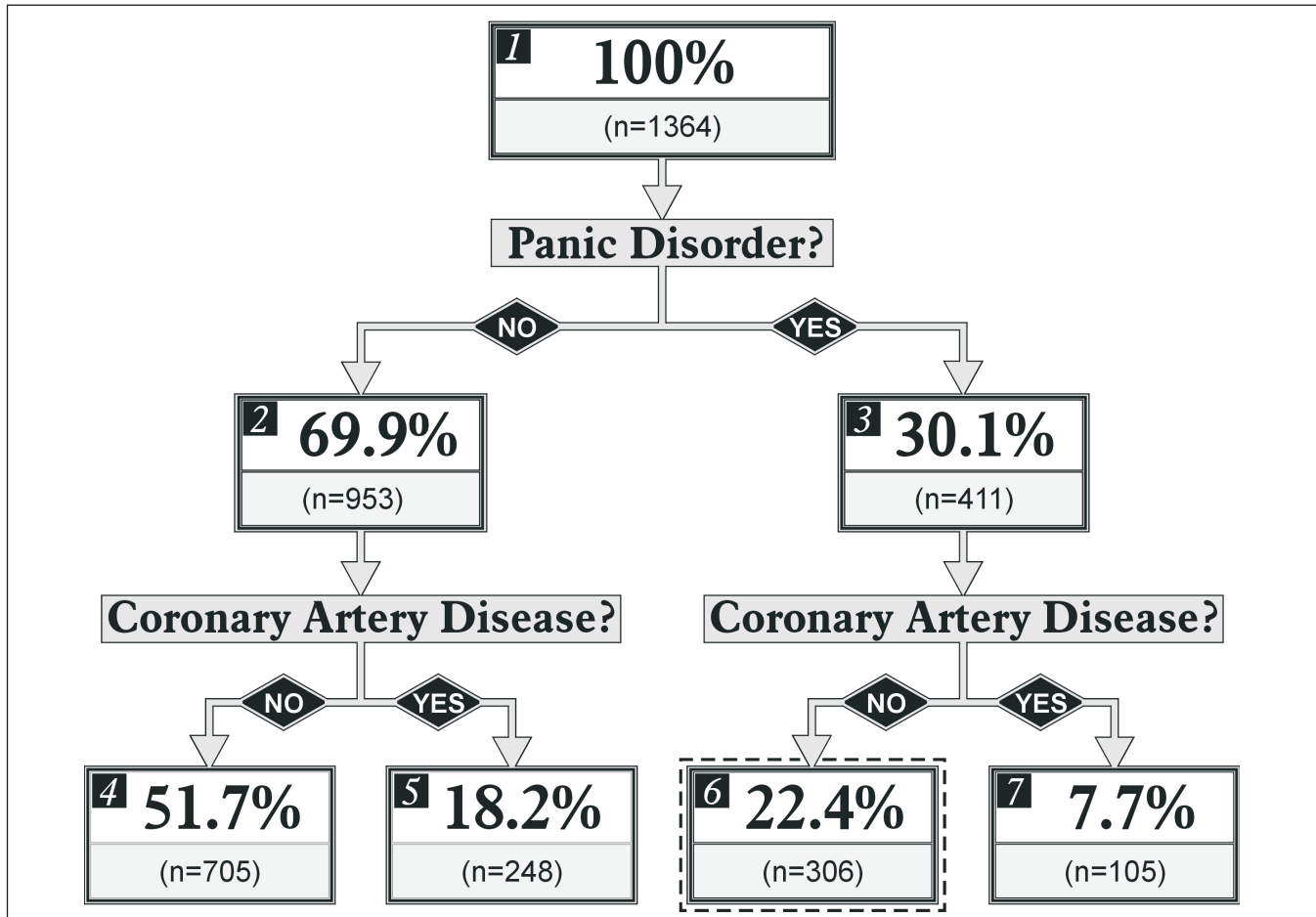


Figure 1. Of the 1364 patients who were tested for CAD, 22.4% were found to have PD but no CAD (Figure 1, cell 6). Only 18.2% of those tested for coronary problems had CAD as an unequivocal cause for their chest pain (cell 5). If a chest pain patient had PD, the chance that their chest pain could be attributed to CAD was only 26% (cell 7 divided by cell 3). Results from these 7 samples indicate that patients whose chest pain is significant enough to warrant testing for CAD are just as likely to have PD and no CAD (22.4%; cell 6) as they are to have CAD and no PD (18.2%; cell 5).

Panic Disorder Without CAD: Costs to General Medicine

Figure 1 shows that 74% of chest pain patients who have PD have no CAD (cell 6 divided by cell 3). Even when many of these PD patients have been informed that cardiac catheterization finds them to be cardiac healthy, a high percentage of these patients persist in believing that their ongoing chest pain is indicative of CAD. The research reviewed below further shows that, years after being found to be free of CAD, many PD patients remain as disabled as they were at the time of their catheterization. This leads them to place continuing

demands on the general medical system instead of accessing psychology or psychiatry.

Four studies have explicitly investigated the rates of ongoing disability and health care utilization in PD patients who have received normal coronary arteriograms. First, Bass and others followed 46 PD patients for 1 year after they received normal catheterization results (13). One year after their test results informed them they did not have CAD, 41% still suffered from chest pain. Forty-six percent reported significant phobic symptoms (multiple phobias, subsumed under the diagnosis of "agoraphobia," are a common consequence of PD). Sixty-three percent were continuing to consult a nonpsychiatrist physician about their symptoms, and 24% were unable to work owing to their symptoms. A second follow-up study 11 years later found 74% (31/42) of the surviving patients were still experiencing chest pain (14).

In a third study, Lavey and Winkle followed 45 PD patients 3.5 years after they received medical reassurance from normal coronary arteriograms (15). Seventy-nine percent of those who were initially experiencing limitations resulting from PD-induced cardiac symptoms were still experiencing the same or greater limitations. Despite having been found to be

cardiac healthy, 3.5 years after their normal coronary arteriograms, 56% were on cardiac medications. Eighty-two percent were also still being seen regularly in the general medical system specifically for their “cardiac” complaints; of these patients, 67% had made visits to the ER for evaluation of an episode of chest pain, 26% had been admitted to hospital because of chest pain, and 9% had undergone a second catheterization to rule out heart disease.

The fourth study, by Beitman and others, was unique in that it compared rates of ongoing disability in 2 groups of chest pain patients with normal coronary arteriograms: those who had PD and those who did not (16). This comparison allows us to see the amount of ongoing disability in chest pain patients that is specifically attributable to the presence of PD. Despite the reassurance of normal arteriograms 3 years earlier, PD patients were more likely than non-PD patients (30.6% vs 8.3%; $P < 0.05$) to have a moderate-to-strong belief that they were suffering from CAD. Perhaps PD patients’ lack of trust in their normal catheterization results relates to their experience of higher rates of ongoing chest pain than non-PD patients (71.9% vs 33.3%; $P < 0.05$). Consistent with Lavey and Winkle’s findings (15), 58% of cardiac-healthy PD patients were on cardiac medications at 3-year follow-up. Although the evidence strongly suggests that their ongoing disability with chest pain was due to PD, only 21.9% of PD patients had received psychiatric treatment of any kind in the 3 years since their catheterization ruled out heart disease.

In short, PD patients with chest pain who are without heart disease continue to experience a remarkable amount of disability. For many years after learning of their normal cardiac status, they continue to believe they suffer from heart disease and continue to seek care in the general medical system for their psychologically induced cardiac symptoms. As Beitman and others’ data show, at least at 3-year follow-up, the vast majority of these patients are not directed into the psychiatric sector (16). Lavey and Winkle’s data show that most of such patients continue to inappropriately access general medicine for treatment of their psychiatric illness (15).

PD and CAD: A Lethal Combination

PD and CAD are not mutually exclusive categories. PD patients presenting with chest pain sometimes also have CAD. Figure 1 shows that 7.7% of the 1364 patients across the 7 studies had comorbid PD and CAD (cell 7). This research finding has not received the attention it deserves, since we now know that missing the comorbid PD diagnosis in a CAD group has potentially lethal consequences.

In particular, research indicates that the risk of patients’ dying from their ischemic heart disease is much greater if they have multiple phobias. It is important to note here that multiple phobias are often caused by PD; that is, repeated panic attacks,

often cause agoraphobia, which is characterized by phobic fears of multiple situations. Haines and others’ long-term follow-up study of 1457 men found that initial high scores for phobic anxiety were very strongly related to later fatal CAD events (17). The relation between phobia score and fatal CAD events was stronger than (and independent of) the relations between fatal CAD events and better-known risk factors, such as smoking history, cholesterol concentration, and systolic blood pressure. Underscoring the validity of these findings, Kawachi and others replicated and extended them in a 2-year follow-up of an extremely large sample of men ($n = 33\,999$) (18). Their conclusions mirrored those of Haines and others (17):

Risk of fatal CHD [coronary heart disease] increased with levels of phobic anxiety. . . . No association was found between phobic anxiety and risk of nonfatal MI [myocardial infarction]. These findings remained essentially unchanged after adjusting for a broad range of cardiovascular risk factors. . . . The specificity, strength, and dose–response gradient of the association [of phobia score to fatal MI], together with the consistency and biological plausibility of the experimental and epidemiologic evidence, support a strong causal association between phobic anxiety and fatal CHD ($p = 1992$).

Additional evidence of the significant link between anxiety and fatal cardiac events was provided by these same researchers in a separate study of 402 fatal and nonfatal coronary events during a 32-year follow-up study (19):

Compared with men reporting no symptoms of anxiety, men reporting two or more anxiety symptoms had elevated risks of fatal CHD . . . and sudden death. . . . No excess risks were found for nonfatal myocardial infarction or angina. . . . These data suggest an association between anxiety and fatal coronary heart disease, in particular, sudden cardiac death ($p = 2225$).

The leading hypothesis regarding the mechanism that mediates between phobias or anxiety and fatal ischemic heart events is that the repeated adrenaline and noradrenaline surges that accompany phobically triggered panic attacks, over a period of years, damage the electrical stability of the myocardium (the middle layer of the walls of the heart, composed of cardiac muscle); this damage may make the heart more vulnerable to fatal arrhythmias, triggered by subsequent panic attacks (17).

Cost-Effective Assessment of PD in ER Chest Pain Patients

The research that demonstrates a high rate of PD in ER chest pain patients also shows that having appropriately trained personnel do psychological diagnostic interviews is effective in identifying PD. However, this solution raises sociologic and resource issues.

First, it is not typical for psychologists or psychiatrists to be invited to consult in the ER when chest pain is the primary presenting symptom. Traditionally, only the on-call cardiologists are consulted. Therefore, it is in the sociology, the culture of the Emergency Department, that changes need to be made if PD is to be detected in this population. Mental health professionals and the ER staff must work collaboratively to ensure that chest pain patients receive optimal assessment and appropriate care. One possibility might be to negotiate with on-call cardiologists access by mental health professionals to those ER chest pain patients who are diagnosed as having atypical angina, since this group has particularly high rates of PD and lower rates of actual CAD (5,7,20–22).

The second issue concerns the resources needed to perform psychological evaluations of chest pain patients. There is an emerging body of evidence regarding cost-effective ways of identifying PD in ER chest pain patients. While full psychological diagnostic interviews might be ideal, there are less expensive yet still relatively sensitive ways of identifying PD in this population. Two approaches have shown promise. The first was developed by Fleet and others (23). Their statistical analysis of self-administered questionnaire measures of PD and chest pain variables resulted in a composite questionnaire measure requiring only 10 minutes of patient and staff time. Their composite measure correctly predicted the presence or absence of PD in 73% of a large cohort of ER chest pain patients. Second, using a different and somewhat simpler approach, Fraenkel asked 3 questions of chest pain patients, directed at determining the prominence of either frightening cognitions during chest pain vs a primary preoccupation with the physical symptoms of chest discomfort (24). The results supported the idea that measuring subjective fear level during chest pain episodes was of significant value in determining the presence or absence of PD (that is, frightening cognitions were more prominent in patients with PD).

Cost-Effective Interventions for ER Chest Pain Patients with PD

First, ideally, chest pain patients with PD and no CAD would be directed to psychological or psychiatric programs for treatment, ending the cycle of inappropriate general medical care for this group. By appropriately referring PD patients to treatment programs, their disability and distress associated with their panic symptoms would be addressed, as would the issue of the financial impact of these patients' repeated use of the general medical system. Hunsley's recent review on the impact of psychological interventions on health care costs concluded that psychological services for various health problems (including PD) could reduce health care costs by reducing the utilization of other health care services (3).

A cost-effective approach studied by Swinson and others of the Clarke Institute of Psychiatry involved the use of a single, very brief (20-minute) intervention in the ER for 33 patients presenting with panic attacks (25). One-half of the sample received only "reassurance" that their symptoms were due to a panic attack, while the other group received additional instructions to expose themselves to situations that they feared (that is, exposure therapy, an integral part of empirically validated treatment for PD and agoraphobia). For such a brief intervention, the results at 6-month follow-up were impressive:

The subjects who received exposure instruction significantly improved over the 6-month period on depression, avoidance, and panic frequency. The reassurance subjects did not improve on any measure and eventually reported more agoraphobic avoidance (p 944).

Dyckman and others (26) also provided PD patients presenting to the ER with a brief (20- to 30-minute) contact with psychiatry and found that:

[PD] patients who received brief face-to-face contact in the ED [Emergency Department] with a representative from the psychiatry department had a statistically significant reduction of ED use. . . . Providing disorder-specific information and intervention when patients seek symptomatic relief maximizes the effectiveness of treatment for panic episodes and reduces reliance on the ED (p 426).

Surprisingly, given the high incidence of PD in certain ER patient groups, these are the only 2 studies to measure the efficacy of brief treatment in the ER for patients presenting with PD. Both studies show, however, that the application of even minimal psychological resources to PD patients in the ER can have lasting therapeutic effects and result in cost savings to the ER.

Summary of the Problem

PD patients erroneously attribute the dramatic somatic symptoms of their condition to serious medical disease and therefore seek out and receive a great deal more general medical care than any other psychiatric group (1,27). Despite reassurance from specialty medical examinations such as cardiac catheterization, most of these patients remain convinced their PD symptoms are medical in nature, remain as disabled as they were at the time of their initial catheterization, and continue to inappropriately access general medical care for their symptoms for many years thereafter.

Arguably, the main reason for PD patients' continued use of general medicine for their psychological symptoms is that their PD remains undiagnosed. In the ER, PD patients with chest pain have their PD go undiagnosed about 98% of the time (4). By improving recognition of PD in the ER beyond these trace levels, there is the potential to generate large savings in general medical care. In addition, once diagnosed, with

the availability of empirically supported and effective pharmacologic and psychological treatments for PD (28), these patients may be saved many years of disability.

Relatively simple and inexpensive changes to the assessment (and treatment) of patients presenting to ER with chest pain would address the substantial costs they impose on the general medical system. An increased sensitivity to the diagnosis of PD in ER chest pain patients would also alert physicians to the substantially higher risk of fatal cardiac events in a number of these patients.

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Résumé : Panique à la salle d'urgence

Objectif : Cet article examine la relation entre la coronaropathie (CP) et le trouble panique (TP), discute des implications de cette relation sur le système médical général, et suggère une évaluation et des stratégies d'intervention futures pour les services d'urgence.

Méthode : Nous avons étudié la documentation sur la CP et le TP à l'aide de Medline et de PsycInfo.

Résultats : Le TP coûte plus cher à notre système médical général non psychiatrique que toute autre affection psychiatrique. La principale raison pour laquelle les patients continuent d'utiliser la médecine générale pour leurs symptômes psychologiques est que leur TP demeure non diagnostiqué. À la salle d'urgence (SU), les patients souffrant de TP qui présentent des douleurs thoraciques ne se font pas diagnostiquer un TP dans environ 98 % du temps. Si les SU appliquaient une évaluation spécifique et des stratégies d'intervention aux patients qui présentent des douleurs thoraciques, les économies pourraient être substantielles pour le système médical général.

Conclusions : En améliorant la reconnaissance du TP à la SU, il est possible de réaliser d'importantes économies dans les soins médicaux généraux. Étant donné la disponibilité de traitements psychologiques et pharmacologiques efficaces ou empiriquement valides du TP, diagnostiquer adéquatement et traiter subséquemment les patients souffrant de TP pourrait éviter à ceux-ci de nombreuses années d'incapacité et des taux supérieurs d'accidents coronariens fatals.