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## Are Coffee Nerves in the Short Run Able to Prevent the Tremors of Parkinson Disease in the Long Run?

A B S T R A C T & C O M M E N T A R Y

*Synopsis: Both coffee and caffeine intake appeared to protect against the development of Parkinson's disease.*

**Source:** Ross GW, et al. *JAMA* 2000;283:2674-2679.

Ross and colleagues of the Honolulu heart program may have uncovered yet another “lifestyle” association with Parkinson Disease (PD). The objective of this study was to explore the relationship of coffee and dietary caffeine intake with PD. Coffee and total caffeine intake were analyzed in the large (> 8000 men), long (> 20 years), prospective study. The study controlled for cigarette smoking, cholesterol level, physical activity, energy intake, hypertension, diabetes, and other nutrients in coffee (niacin, cream, sugar). Both coffee and caffeine intake appeared to protect against the development of PD. After 24 years of follow-up, the odds ratio (OR) for nondrinkers of coffee compared with drinkers was 2.9 (CI = 1.7-5.1).

### ■ COMMENT BY BARBARA PHILLIPS, MD, MSPH

Approximately 1 million Americans, including Mohammad Ali, Janet Reno, and Michael J. Fox, have PD. Internists tend to leave the diagnosis and management of PD to our colleagues in neurology. It behooves us to know about it because PD is a prevalent disorder (affecting 3% of those > 65 in the United States) that has lately received a fair amount of attention in the lay press because of the fame (or notoriety) of some of those afflicted. It is generally considered to be a disease of aging (indeed, the median age of onset in the current study was 73.6 years, range 54-89 years), but Michael J. Fox's public disclosure of his diagnosis of PD at the age of 30 captured the interest of the media and the public.

PD is a horrible affliction involving gradual deterioration of the lernerve cell clusters that produce dopamine. It results in tremor, bradykinesia, rigidity, and postural instability. It generally

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responds at least partially to dopaminergic agents, but these drugs have their own problems.

PD is believed to be related to environment and lifestyle, and previous studies have found low rates of PD in "thrill-seeking" people, including cigarette smokers and heavy alcohol drinkers.<sup>1-3</sup> Heavy coffee drinking appears to fit in with this overall risk-taking lifestyle.

Ross et al speculate that the low rate of PD in heavy coffee drinkers could be due to a psychological or physiological intolerance to caffeine among people with a constitutional propensity to develop PD. Other possibilities are that caffeine might increase central dopaminergic tone or that people destined to develop PD used caffeine-containing analgesics and reduced coffee to avoid excess caffeine.

Although it is too early to recommend coffee or caffeine as a treatment for PD, it seems like a good idea to have a cup or two in the morning. ❖

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**VICE PRESIDENT/GROUP PUBLISHER:**  
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**EDITORIAL GROUP HEAD:** Glen Harris.

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**ASSOCIATE MANAGING EDITOR:** Robin Mason.  
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**GST Registration Number:** R128870672.

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Please call **Robin Mason**, Associate Managing Editor, at (404) 262-5517 (e-mail: robin.mason@ahcpub.com) or **Neill Larmore**, Assistant Managing Editor, at (404) 262-5480 (e-mail: neill.larmore@ahcpub.com) between 8:30 a.m. and 4:30 p.m. ET, Monday-Friday.

## Subscriber Information

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**Customer Service E-Mail:** customerservice@ahcpub.com

**Editorial E-Mail:** neill.larmore@ahcpub.com

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# Some Uncommon Facts About the Common Cold

ABSTRACT & COMMENTARY

**Synopsis:** *Paranasal sinus involvement in the common cold may be explained by the finding that nose blowing is associated with the passage of nasal secretions into the paranasal sinuses.*

**Source:** Gwaltney JM Jr, et al. *Clin Infect Dis* 2000;30: 387-391.

The common cold is frequently associated with symptoms suggestive of the presence of paranasal sinusitis and evidence indicates that fluid may frequently be present in the sinuses of patients with colds. Gwaltney and colleagues set out to determine a potential mechanism for this finding.

Intranasal pressures were measured in healthy adult volunteers during nose blowing, sneezing, and coughing, and paranasal sinus CTs were performed after each of these maneuvers with instillation of radiopaque contrast medium into the nasopharynx. While mean intranasal pressure transiently increased to only 6.6 mm Hg and 4.6 mm Hg after, respectively, coughing and sneezing, it increased to 66.2 mm Hg after nose blowing. The mean pressure during quiet respiration was only 0.9 mm Hg. Sneezing with the mouth closed was associated with peak intranasal pressures of 88-76 mm Hg.

Mathematical modeling indicated that only trivial amounts of nasal fluid would flow into the maxillary sinus after sneezing or coughing. In contrast, 1 mL flowed into this cavity after nose blowing. Consistent with this prediction, CT scans demonstrated contrast intrusion into the osteomeatal complex and ethmoid and sphenoid sinuses of all four volunteers and in the maxillary and frontal sinuses of two of the four. Air bubbles were seen in the maxillary and sphenoid sinuses of one of the volunteers.

## ■ COMMENT BY STAN DERESINSKI, MD, FACP

This same investigative group has previously demonstrated that the overwhelming majority of patients with symptoms of the common cold have CT evidence of

paranasal sinus abnormalities.<sup>1</sup> The proposed means by which these abnormalities occur have included direct viral infection of the sinus mucosa and secondary bacterial infection. The observations described above provide another, more direct mechanism—the propulsion of nasal secretions into the sinuses as a result of nose blowing, something that occurs an average of 45 times during the first three days of an experimental cold.<sup>2</sup> This phenomenon had previously been suggested to Gwaltney et al by the detection of air bubbles in the sinuses of patients with colds.

One potential consequence of this hydrodynamic effect is secondary bacterial infection of the paranasal sinuses, a complication said to occur in approximately 2% of common colds.<sup>3</sup> Making a clinical distinction between the patient with bacterial sinusitis from that with uncomplicated but symptomatic nonbacterial sinusitis (“viral sinusitis”) is difficult. No single finding is diagnostic. A biphasic illness may occur and the presence of several of the following is suggestive: maxillary toothache, poor response to decongestants, history or observation of colored or purulent nasal discharge, and abnormal transillumination.<sup>4,5</sup>

The treatment of the uncomplicated common cold has been the subject of a series of meta-analyses by the Cochrane group. Their conclusions include the following:

- A single dose of nasal decongestant is associated with a mean 13% decrease in subjective symptoms relative to placebo.<sup>6</sup> No evidence supports their repeated use over several days.
- The use of heated, humidified air is associated with subjective, but not objective improvement.<sup>7</sup>
- The benefit of zinc lozenges is uncertain.<sup>8</sup>
- Vitamin C does not prevent the common cold, but high doses may have a modest (8-9%) reduction in duration of symptoms.<sup>9</sup>
- The role of Echinacea preparations is unclear.<sup>10</sup>
- Antibiotic therapy was associated with increased incidence of adverse events, but no improvement in symptoms.<sup>11</sup>

Unfortunately, the question of antibiotic therapy remains a complicated one. A recent study attempted to determine if the putative anti-inflammatory effects of macrolide antibiotics might improve the symptoms of the common cold, independently of their antimicrobial effects.<sup>1</sup> In this study, patients were randomized to receive either clarithromycin or trimethoprim-sulfamethoxazole; there was no difference in outcomes.<sup>12</sup> Unfortunately, no placebo group was included.

A subset of patients may, however, benefit from antibiotic therapy. Kaiser and colleagues randomized patients to receive either co-amoxiclav or placebo. While no improvement was associated with antibiotic therapy in the entire group of patients, in the subset (approximately 20%) whose

entry cultures yielded either *S. pneumoniae*, *M. catarrhalis*, or *H. influenzae*, co-amoxiclav administration was associated with significantly less severe and prolonged illness. Unfortunately, this subset could not be identified by clinical criteria.<sup>13</sup> Thus, the findings have no current practical significance since waiting for culture results would likely obviate the benefit in the subset with evidence of bacterial respiratory pathogens. Withholding antibiotics is often difficult and time-consuming for the clinician, given the fact that 44% of adults believed that antibiotic therapy is effective in the treatment of the common cold.<sup>14</sup>

Another intervention that has been evaluated is the use of nasal corticosteroids. Unfortunately, the use of intranasal fluticasone propionate did not improve the symptoms of the common cold and its use was associated with increased viral shedding, a finding also reported with aspirin administration.<sup>15,16</sup>

On the other hand, two other interventions have each been demonstrated to reduce nasal secretions: oral administration of antihistamines (brompheniramine, clemastine fumarate) and the intranasal administration of ipatropium bromide.<sup>2,17,18</sup> The reduction of rhinorrhea may potentially decrease the amount of fluid expelled into the paranasal sinuses during nose blowing and thereby diminish the risk of bacterial sinusitis. (Dr. Deresinski is Clinical Professor of Medicine, Stanford University, Director, AIDS Community Research Consortium, Associate Chief of Infectious Diseases, Santa Clara Valley Medical Center, Redwood City, Calif.) ❖

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## Beneficial Effects of High Dietary Fiber

ABSTRACT & COMMENTARY

**Synopsis:** A high-fiber diet resulted in improved glycemic control and a better lipid profile.

**Source:** Chandalia M, et al. *N Engl J Med* 2000;342:1392-1398.

Earlier this year, the dietary guidelines of the American Diabetes Association (ADA) were revised, recommending that saturated fats be replaced with carbohydrates or—alternatively—with cis monounsaturated fat. The ADA also recommended that the diet include at least 20-35 g/d of dietary fiber, because it has been established that dietary fiber has a cholesterol lowering effect. The expert panel considered the effects of dietary fiber on glycemic control to be minimal and considered it difficult to design a diet that contained a significant quantity of dietary fiber unless foods or supplements fortified with fiber were added. Chandalia and colleagues challenged this latter assumption, proposing that not only could they design a high-fiber diet in the absence of a supplement, but also that the diet would have a favorable effect on glycemic control.

Chandalia et al recruited 13 patients (12 men, 1 woman) with type 2 diabetes. The patients ate one meal at the center during the week; the remainder of meals were packaged to be eaten at home. For six weeks, the patients ate either a typical ADA diet or the high-fiber study diet. At the end of six weeks, diets were switched. Plasma glucose levels were closely monitored. Glycosylated hemoglobin was measured at baseline and at the end of each six-week interval. Serum lipids were also monitored. Fecal sterol balance was also studied in order to gain insight into the mechanism by which dietary fiber lowers serum cholesterol. Plasma glucose and insulin levels were measured on

the last day of each dietary period, and 24-hour urine glucose excretion was quantitated on days 38 through 42.

The ADA diet provided 24 g/d of fiber (8 g soluble, 16 g insoluble). The study diet provided 50 g/d of fiber (25 g soluble, 25 g insoluble). To achieve this level of fiber, the following kinds of unfortified foods were used: cantaloupe, grapefruit, orange, raisins, lima beans, okra, sweet potato, winter squash, granola, oat bran, peas, zucchini, whole wheat bread, papaya, fruit cocktail, and fresh peaches. Dietary compliance was rated excellent. The patients' weights did not change throughout the study.

Compared to the ADA diet, the high-fiber diet resulted in an 8.9% reduction in mean plasma glucose concentration, a 6.7% reduction in fasting plasma total cholesterol concentration, a 6.3% lowering of LDL cholesterol, and a 10.2% lowering of triglycerides. The high-fiber diet also reduced hyperinsulinemia, but glycosylated hemoglobin was only slightly lower, which Chandalia et al attribute to the short time period of the study. The sterol excretion study suggests that fiber exerts its cholesterol lowering effect via elimination of bile acids. The improved glycemic control may be a function of reduced or delayed absorption of carbohydrates.

### ■ COMMENT BY MICHAEL K. REES, MD, MPH

Chandalia et al note that the average fiber intake of people (including diabetics) living in western countries is 17 g/d. They demonstrate that it is relatively easy to construct a 50 g/d fiber diet without the use of supplements, and that the diet is palatable and well accepted. They recommend that dietary guidelines for patients with diabetes should emphasize an overall increase in dietary fiber through the consumption of unfortified foods, rather than use of fiber supplements—once again proving that eating your fruits and veggies is good for you! ❖

## Clinical Profile of Young Women with CAD

ABSTRACT & COMMENTARY

**Synopsis:** Hyperlipidemia and the postmenopausal state were most commonly associated with young women who have CAD.

**Source:** Gurevitz O, et al. *Am J Cardiol* 2000;85:806-809.

Since young women have been identified as a group in whom the misdiagnosis of acute ischemic

heart disease syndromes can often occur, Gurevitz and associates examined clinical data on 135 women younger than age 50 who were referred for coronary angiography because of chest pain. Catheterization revealed coronary artery disease (CAD) in 79, whereas 56 had no significant CAD. After a two- to seven-year follow-up, the patients' charts were examined. The mean age of 45 years was the same for both groups. Previous myocardial infarction (MI), hyperlipidemia, and postmenopausal state without hormone replacement were significantly more common in the women with CAD. Among the 61 women who had a stress test before the catheterization, positive or negative studies did not identify those with CAD. Of the 56 women with no significant CAD, 88% had completely normal coronary arteries. Most of the women with significant CAD had single-vessel disease (61%). Revascularization was performed in 82% of the women with CAD. During the mean follow-up of 45 months, three women had acute MI and five died. All of these women had CAD. Congestive heart failure and subsequent revascularization were also more common during follow-up in the women with CAD, but there was no difference in admissions for chest pain. Gurevitz et al conclude that hyperlipidemia and the postmenopausal state were most commonly associated with young women who have CAD. Unfortunately, noninvasive testing does not accurately identify those with CAD, suggesting that a more invasive approach is preferable in women with risk factors for CAD.

#### ■ COMMENT BY MICHAEL H. CRAWFORD, MD

Although this study represents the women who made it through the triage process and underwent cardiac catheterization, it sheds some light on which young women are more likely to have CAD and thus should be more aggressively diagnosed. Not surprisingly, hyperlipidemia and the postmenopausal state were most predictive of the presence of CAD among these women with chest pain. Somewhat surprisingly, other risk factors such as smoking, diabetes, and hypertension were not predictive. Undoubtedly, this had something to do with the selection process. In our hospital, we pay more attention to young women with chest pain and any risk factors.

The incidence of CAD was high in this cohort (58%), which again must be due to the selection process. Epidemiological studies have suggested that CAD in women younger than age 50 is still unusual. The fact that most of the CAD was single-vessel disease is not surprising, but I was surprised that the left anterior descending was the most commonly involved vessel, since LAD disease is usually the most readily

detected by noninvasive tests. With the high incidence of CAD in this group of women, it is remarkable that stress testing did not do a better job of detecting CAD. Of course, this has been reported before, but usually in less selected groups where you would expect more false negatives. It is a tribute to the clinical acumen of these physicians that they persevered and did catheterization on these women with negative stress tests. This would be hard to do in the United States (the study was done in Israel).

The message here is that young women who present with chest pain and have risk factors for CAD, especially hyperlipidemia and the postmenopausal state, should be managed aggressively, with cardiac catheterization being seriously considered. (*Dr. Crawford is Robert S. Flinn Professor, Chief of Cardiology, University of New Mexico, Albuquerque, NM.*) ❖

## Pharmacology Update

### Insulin Glargine Injection (Lantus—Aventis Pharmaceuticals Inc.)

*By William T. Elliott, MD, FACP  
and James Chan, PharmD, PhD*

Insulin glargine is a new long-acting insulin produced by recombinant DNA technology. The drug is an analog of human insulin with asparagine replaced by glycine in position A21 and two arginines are added to the C-terminus of the B-chain.<sup>1</sup> These changes result in a relatively constant concentration/time profile over 24 hours allowing just one shot a day. The drug is produced using a nonpathogenic strain of *Escherichia coli* and is manufactured by Hoechst Marion Roussel in Germany. It will be marketed in this country by Aventis under the trade name Lantus.

#### Indications

Insulin glargine is indicated for once-daily administration at bedtime for the treatment of adults and pediatric patients with type 1 diabetes mellitus or adults with type 2 diabetes mellitus who require basal insulin for the control of hyperglycemia.<sup>2</sup>

#### Dosage

Insulin glargine is administered subcutaneously once daily at bedtime. The average starting dose is 10 IU once

daily and is adjusted according to need. The range is 2-100 IU.<sup>2</sup> Patients switching from once-daily NPH or ultralente insulin may be started at the same dose. Those switching from twice-daily NPH should be initiated at 80% of the total daily dose of NPH insulin to reduce the risk of hypoglycemia.<sup>2</sup> There appears to be no significant difference in absorption characteristics from subcutaneous sites using the arm, leg, or abdomen.<sup>4</sup>

Insulin glargine is supplied at 100 IU per mL in 5 mL, 10 mL, and 3 mL cartridges (for OptiPen).

### Potential Advantages

Insulin glargine is slowly released from the subcutaneous injection site resulting in relatively constant, peakless, plasma levels for over 24 hours. This pharmacokinetic profile permits once-daily dosing.<sup>1,2,4,5</sup> Nocturnal hypoglycemia (blood glucose < 2 mmol/L) may be lower with insulin glargine compared to NPH insulin as basal-bolus treatment.<sup>3,6</sup> In a published, multicenter, randomized, parallel trial in a well controlled type 1 subject, insulin glargine achieved a lower frequency of nocturnal hypoglycemia (18.2% vs 27.1%; P = 0.01).

### Potential Disadvantages

Insulin glargine differs from other insulins in isoelectric point; therefore, it cannot be mixed or diluted with other insulins or solutions. Mixing may delay the onset of action.<sup>1</sup> Due to its prolonged duration of action, should hypoglycemia occur, recovery will be prolonged.

### Comments

The modification of human insulin to insulin glargine shifts the isoelectric point closer to neutral, making it more soluble, relative to human insulin in an acidic environment.<sup>3</sup> This is accomplished by replacing glycine with asparagine in position A21 and two arginines are added to the C-terminus of the B-chain. These changes result in an insulin molecule, which precipitates in physiologic pH and favors hexamer formation and a relatively constant level over 24 hours with no pronounced peak. In a comparative trial, insulin glargine was compared to NPH insulin administered once or twice daily in type 1 or type 2 diabetic patients. Results indicate that insulin glargine was at least as effective as NPH insulin in terms of glycemic control (i.e., glycated hemoglobin) and overall rate of hypoglycemia.<sup>2</sup> The incidence of nocturnal hypoglycemia may be lower with insulin glargine.

### Clinical Implications

Insulin glargine is another “designer insulin,” pro-

duced by modifying human insulin via recombinant technology to produce varied duration of action. Insulin lispro and the newly introduced insulin aspart are ultra-short-acting insulins, while insulin glargine is long acting. Insulin glargine offers the advantage of providing a basal insulin level for 24 hours, an important advantage for type 1 patients. The drug cannot be mixed with other insulins, but this may be only a minor disadvantage as diabetics move to combining long-acting bedtime insulin with short-acting insulin at mealtime. Insulin glargine is expected to be available in the fall of 2000. ❖

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## CME Questions

1. Which of the following is correct?
  - a. Sneezing, but not coughing or nose blowing, is associated with the propulsion of nasal secretions into the paranasal sinuses.
  - b. The presence of air bubbles in a paranasal sinus is unequivocal evidence of anaerobic infection.
  - c. The administration of antihistamines, nasal decongestants, and intranasal ipatropium bromide are each associated with decreased nasal secretions in patients with the common cold.
  - d. Intranasal flucitasone decreases viral shedding in patients with the common cold.
2. What is the average daily fiber content of the average western diet?
  - a. 7 g
  - b. 17 g
  - c. 27 g
  - d. 47 g
3. Women younger than 50 years of age with CAD are likely to be:
  - a. postmenopausal.
  - b. hyperlipidemic.
  - c. post-MI.
  - d. All of the above
4. Insulin glargine:
  - a. can be mixed with other insulins.
  - b. cannot be mixed or diluted with other insulins.
  - c. requires twice-daily dosing.
  - d. provides a basal insulin level for 12 hours.

By Louis Kuritzky, MD

## Prevention of Pulmonary Embolism and Deep Vein Thrombosis with Low-Dose Aspirin

A variety of tools have been evaluated for their efficacy in reducing venous thromboembolism (DVT) post surgically and in other high-risk circumstances. Although heparin subcutaneously has been shown to reduce DVT risk by at least half, the benefit of this intervention remits once heparin is discontinued, usually at the time of hospital discharge. Despite the fact that antiplatelet therapies have been shown to reduce risk of MI and stroke, they have not been generally embraced as effective DVT prevention. Meta-analysis of antiplatelet therapy postsurgically indicates a 40% reduction in DVT and a 66% reduction of pulmonary embolism (PE). The current trial was devised to confirm (or refute) in a single prospective trial whether low-dose aspirin would reduce DVT in an at-risk population, specifically, persons undergoing orthopedic surgical procedures.

From 1992 to 1998, 13,356 patients were randomised to 160 mg/d of aspirin (begun the day of surgical intervention in 82% of cases, preoperatively) or placebo. Patients were followed up to 35 days.

Aspirin treatment was associated with a 29% reduction in DVT, and a 43% reduction in PE, compared with placebo. The frequency of fatal bleeding among hip-fracture patients was the same in aspirin and placebo recipients. The only demonstrated bleeding consequence detected more often in aspirin subjects was the frequency of postoperative bleeding requiring transfusion (2.9% vs 2.4%). The authors conclude that low-dose aspirin reduces risk of PE, fatal PE, and DVT. ❖

*Pulmonary Embolism Prevention Trial Collaborative Group. Lancet 2000;355:1295-1302.*

## As-Needed Use of Fluticasone Propionate Nasal Spray Reduces Symptoms of Seasonal Allergic Rhinitis

It is likely that most clinicians anticipate chronic daily administration of nasal steroid therapy (NS) for many of their patients who are established as sufferers of seasonal allergic rhinitis. On the other hand, since NS pathophysiologically prevents inflammation from developing, prevents allergic priming, and blocks the late allergic response, dose administration for mild disease may have a somewhat durable effect. In contrast, antihistamines block only the immediate allergic response and have less effect as allergy season becomes more established and the late allergic response more activated. This placebo controlled study evaluated the use of fluticasone nasal spray (FNS) taken as needed for allergic rhinitis symptoms during allergy season (n = 56).

Over the course of 28 days, as-needed dosing resulted in an average of 14-16 dose administrations (placebo or FNS). Symptom scores among active drug recipients were dramatically lower (mean = 4.5) than placebo recipients (mean = 8.5), despite the fact that active medication was administered on only approximately half of the study days.

Jen and associates point out that it is likely that many patients administer NS less often than directed, or on an as-needed basis. This study suggests that even as-needed NS provides substantial relief to allergic rhinitis sufferers. ❖

*Jen A, et al. J Allergy Clin Immunol 2000;105:732-738.*

## Efficacy and Safety of Sertraline Treatment of Post-Traumatic Stress Disorder

Although post-traumatic stress disorder (PTSD) used to be commonly considered a disorder of soldiers exposed to combat stressors, we now recognize that physical and sexual assault may result in the same chronic symptoms constellation. Literally, more than half of the entire U.S. population experiences at least one major traumatic event in their life, when one includes experiences like natural disasters, serious motor vehicle accidents, and witnessing serious injury to another.

The three characteristic domains of PTSD symptoms include re-experienced thoughts, avoidance of things associated with the trauma, and altered states of arousal when confronted with PTSD-associated factors. These symptoms may be chronic, with a median duration of 3-5 years. Few trials have addressed the efficacy of pharmacotherapy for PTSD. Since animal models of PTSD suggest that sertraline has some efficacy, and other SSRIs have shown some benefit, this large trial (n = 187) of men and women examined the effect of sertraline 50-200 mg q.i.d.

After 12 weeks of active treatment, three of four primary outcome measures were statistically significantly improved. Additionally, sertraline treatment was associated with improvement in social and occupational function, and improved quality of life. Overall, more than half of patients were much improved, experiencing a 79% reduction in symptom severity. Brady and colleagues conclude that sertraline is an effective treatment for PTSD. ❖

*Brady K, et al. JAMA 2000;283:1837-1844.*

## Nonhyperkalemic T Waves

By Ken Grauer, MD

**Figure.** ECG obtained from a previously healthy 69-year-old woman with chest tightness of several hours duration.

**Clinical Scenario:** The ECG shown in the Figure was obtained from a previously healthy 69-year-old woman who presented with chest tightness of a few hours duration. She was hemodynamically stable at the time this ECG was recorded. Serum potassium was normal. No prior tracing was available. What do you suspect was going on? Clinically, what would you do?

**Interpretation:** The rhythm is sinus at a rate of 100/minute. The mean QRS axis and all intervals are normal. There is no sign of chamber enlargement. There are no Q waves, R wave progression is normal, and nondiagnostic ST-T wave flattening is seen in the inferior leads. However, the appearance of the ST segments and T waves in the precordial leads is exceedingly worrisome. Specifically, T waves are peaked in leads V<sub>1</sub> through V<sub>4</sub> and there is definite ST depression in leads V<sub>2</sub> through V<sub>5</sub>. In view of the history (new chest tightness in an older adult), the combina-

tion of these findings should strongly suggest the possibility of true posterior infarction that may be in active evolution. If more than 20-30 minutes had passed, a new ECG should have been requested in the hope of clarifying the clinical picture. This patient was catheterized acutely—and severe 3-vessel disease with a 99% occlusion of the left main coronary artery was found. Unfortunately, the patient coded shortly thereafter, and could not be resuscitated.

Although acute posterior infarction most often occurs in association with acute inferior infarction (since both areas of the heart are usually supplied by the same right coronary artery)—true posterior infarction may sometimes occur in isolation, as it does here. Anterior precordial leads demonstrate the “mirror image” view of electrical activity in the posterior wall (instead of coded ST elevation and T wave inversion, there is ST depression and T wave peaking as seen here in leads V<sub>1</sub> through V<sub>4</sub>). ❖