

Mild Renal Impairment Increases Risk of AF

BY BRUCE JANCIN
Denver Bureau

DENVER — Mild renal impairment constitutes an important new predictor of new-onset atrial fibrillation, Dr. Nicholas S. Peters reported at the annual meeting of the Heart Rhythm Society.

The most likely pathophysiologic mechanism for this association involves the elevated renin-angiotensin-aldosterone system activity characteristic of mild renal dysfunction. Such a mechanism, in turn, gives rise to a readily testable hypothesis that drugs that block renin-angiotensin-aldosterone overactivity—ACE inhibitors, angiotensin receptor blockers, and aldosterone blockers such as spironolactone—may reduce the incidence of new-onset atrial fibrillation (AF), according to Dr. Peters of Imperial College London.

He reported on 203 consecutive patients with new-onset AF and 781 without AF who were enrolled in the Imperial College New AF Study, a prospective epidemiologic study of AF in a community setting.

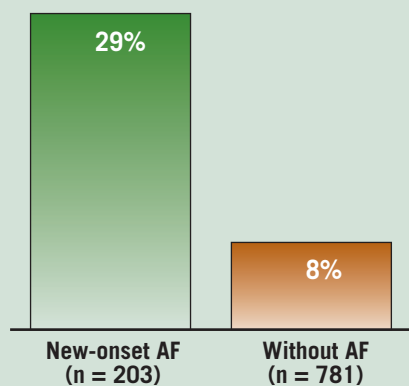
The mean serum creatinine level was significantly higher in patients presenting with their first episode of AF (94 micromol/L) than in controls (83 micromol/L). The AF patients had a mean estimated glomerular filtration rate (eGFR) of 68 mL/min per 1.73 m², compared with 82 in controls. The prevalence of renal impairment as

defined by an eGFR below 60 mL/min per 1.73 m² was 29% in the group with AF, compared with 8% in those without the arrhythmia. Only a single AF patient had severe renal impairment marked by an eGFR below 30 mL/min per 1.73 m².

An eGFR of less than 60 mL/min per 1.73 m² emerged as an independent predictor of new-onset AF, which conferred a 6.6-fold increased risk. It was also associated with left atrial enlargement: renally impaired AF patients had a mean left atrial diameter of 44.5 mm, compared with 40.8 mm in AF patients with normal renal function.

An association between milder degrees of renal impairment and the atrial arrhythmia has not previously been reported, according to Dr. Peters. ■

Prevalence of Renal Impairment Higher With Atrial Fibrillation



Note: Renal impairment is defined as an estimated glomerular filtration rate below 60 mL/min per 1.73 m².
Source: Dr. Peters

Psychosocial Factors Increase Risk of Death and CVD Events

WASHINGTON — Psychosocial risk factors contribute a level of risk for cardiovascular events in clinically symptomatic women similar to that of the traditional major risk factors, Thomas Rutledge, Ph.D., reported at the annual meeting of the Society of Behavioral Medicine.

Dr. Rutledge and his associates prospectively studied the risk factors of smoking, hypertension, diabetes, dyslipidemia, inactivity, obesity, depression, and social isolation in 734 women with clinical symptoms of MI. Each patient underwent coronary angiography and psychosocial testing. About 30% of the patients experienced one event (MI, heart failure, stroke, or death) during a median follow-up of 5.9 years, said Dr. Rutledge of the department of psychiatry at the University of California, San Diego.

The rate of obstructive coronary artery disease on quantitative angiography was relatively low (39%), even

though the women were clinically symptomatic. The prevalence of individual risk factors ranged from 20% for smoking to 59% for a history of hypertension. Risk factors also tended to cluster together: 78% of patients had two or more while 26% had four or more. The most common cluster consisted of diabetes combined with other risk factors, he said.

Death or CVD events occurred in 12% of women with no or one risk factor, 19% of women with two to three risk factors, and 30% with four to six risk factors. A graded increase in the prevalence of psychosocial risk factors coincided with increases in the total number of risk factors.

"The magnitude of the effects for depression and social isolation were very comparable to those for the major CVD risk factors," he said. Significant risk factors increased the risk of death and CVD events by 50%-100%.

—Jeff Evans

THE EFFECTIVE PHYSICIAN

Endocarditis Prophylaxis

BY WILLIAM E. GOLDEN, M.D., AND ROBERT H. HOPKINS, M.D.

The American Heart Association has issued guidance for the prevention of endocarditis for more than 50 years, and recently issued its first update in a decade. The new guidelines markedly reduce the number of patients who should receive prophylactic antibiotics.

Background

Standards for the prevention of endocarditis have been based on expert opinion because the clinical evidence consists mostly of case-control or descriptive studies.

Endocarditis results from the interaction of microorganisms with the platelet-rich matrix associated with cellular damage in the endocardium. Most microorganisms in mature vegetations are metabolically inactive and not responsive to antibiotics. Left-sided heart vegetations have a greater density of microorganisms than do right-sided lesions.

Viridans streptococci cause more than 50% of community-acquired endocarditis that is not associated with intravenous drug use. This microorganism is part of the normal flora of the skin, the oral cavity, and the respiratory and gastrointestinal systems.

Anaerobic bacteria are prominent pathogens in periodontal disease that frequently cause bacteremia, but rarely cause endocarditis.

Provision of antibiotics has been shown to be effective in preventing endocarditis in animal experiments.

Because of the high rates of bacteremia associated with dental and medical procedures, and the link between bacteremia and endocarditis, it has been believed best to give antibiotics to people with underlying cardiac conditions before they undergo such procedures.

Few data exist on the risk of endocarditis associated with procedures of the gastrointestinal and genitourinary systems.

It is estimated that 15-25 patients per 1 million treated will suffer a fatal anaphylactic reaction after a dose of penicillin. Nearly one-third of these patients had a previous known allergy to penicillin.

Similar reactions to cephalosporins are far fewer: one patient per million treated. Fatal reactions to macrolides or clindamycin are extremely rare.

Although transient bacteremia is common after procedures involving periodontal tissues, estimates of the frequency of bacteremia after other procedures vary widely. Episodes of bacteremia tend to last less than 10 minutes, with a small fraction of events lasting up to 60 minutes, such as after a tooth extraction. There are no published studies relating endocarditis risk to the duration of bacteremia.

Transient bacteremia is also common after daily activities including brushing and flossing teeth, using toothpicks and Water-Picks, and chewing food. The level of bacteremia in daily activities is low, but is similar to the level associated with dental procedures. One study estimates that twice-daily oral hygiene for 1 year exposes a patient to more than 150,000 times the risk of exposure to bacteremia than does a single tooth extraction.

Implementation

Because of the transient bacteremia that occurs as a result of daily activity, patients are at greater cumulative risk of endocarditis on a daily basis than from undergoing dental work, and good oral hygiene may be more protective than periodic antibiotic prophylaxis.

The vast majority of infective endocarditis patients did not have a dental procedure within 2 weeks before the onset of symptoms. Because most cases of endocarditis are not associated with dental procedures, antibiotic prophylaxis—even if 100% effective—would prevent very few cases in the community.

The AHA now recommends that endocarditis prophylaxis be reserved for patients with cardiac lesions of such severity that developing endocarditis would increase their risk of death, such as those with prosthetic heart valves, a history of endocarditis, congenital heart disease, and heart transplants with valvulopathy. When used, prophylaxis should target prevention of infections caused by *Streptococcus viridans*.

Those with mitral valve prolapse or coronary stents do not need endocarditis prophylaxis before invasive procedures.

Endocarditis prophylaxis is no longer recommended for procedures of the gastrointestinal or genitourinary systems.

Prophylaxis requires a single dose of an oral medication. In adults, 2 g of amoxicillin is the preferred agent; in those allergic to penicillin, cephalexin (2 g) or another cephalosporin, clindamycin (600 mg), and macrolides are used.

Patients whose penicillin allergy involves anaphylaxis, angioedema, or urticaria should not receive a cephalosporin as alternative therapy.

Patients who cannot take oral medications should be treated with a single parenteral dose of ampicillin (2 g), cefazolin (1 g), or ceftriaxone (1 g).

Topical antiseptics are not considered effective in reducing the magnitude and duration of bacteremia associated with dental procedures.

Reference

Wilson, W., et al. Prevention of infective endocarditis: Guidelines from the American Heart Association. *Circulation* 2007 (Epub doi:10.1161/CIRCULATIONAHA.106.183095).



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