Aldosterone Can Play Role In Refractory Hypertension

BY KERRI WACHTER
Senior Writer

WASHINGTON — When refractory hypertension rears its head, it might be time to look for problems in the renin-aldosterone system, according to one expert who spoke at a meeting sponsored by the National Kidney Foundation.

In patients with hypertension, the prevalence of primary aldosteronism ranges from 5% to 30%, and the rate is especially high among older patients, said J. Howard Pratt, M.D., professor of medicine at Indiana University in Indianapolis.

Aldosterone works on the collecting duct of the distal nephron to increase the activity of the epithelial sodium channels. The resulting increase in the sodium level promotes hypertension.

There are two types of primary aldosteronism: adenoma and bilateral adrenal hyperplasia. "Adrenal hyperplasia is much more common than the adenomas," Dr. Pratt said. According to many textbooks, adenomas are three times more likely to be the cause of hypertension than hyperplasia. "It's probably the reverse. It's probably much more than three times more common to have hyperplasia than adenoma."

Classically, this disorder presented with a low serum potassium level. Current thinking is that most of these patients have a normal potassium level because of hyperplasia, he said. Serum sodium is usually greater than 140 μmol/L. Renal cysts are present in about 40% of patients. Left ventricular hypertrophy is also common.

"The work-up for primary aldosteronism is very simple, and I think this is one of the reasons that we see so much of it today," Dr. Pratt said. The key is to measure plasma renin and aldosterone levels. Patients can be on any kind of medication to treat hypertension when these tests are performed, with the exception of spironolactone, which blocks the action of aldosterone.

For the diagnosis of primary aldosteronism, plasma aldosterone levels should be greater than 15-20 ng/dL with suppressed renin activity. The ratio of aldosterone to renin also should be greater than 20:30. Urine aldosterone excretion also can be measured; a 24-hour level of 12 μg or greater can indicate the disorder.

Once moderately severe primary aldosteronism has been diagnosed through lab tests, it can be useful to get a CT scan or MRI to check for adrenal tumors, Dr. Pratt said.

Adrenal vein catheterization—a technically difficult procedure—should be considered when the adrenal glands appear normal on CT imaging, but there is still a high suspicion of primary aldosteronism—low potassium level and high plasma aldosterone level. "These are the people who typically have adenomas," he said.

If the patient has a distinct tumor on CT imaging and is older than 40 years, Dr. Pratt performs adrenal vein catheterization because "at that age they could have an incidental adrenal tumor."

Treatment for an adenoma is laparoscopic removal. Bilateral adrenal hyperplasia is treated medically. "The approach that I take is to use a small dose of spironolactone (25 mg/day) with a small dose of a thiazide diuretic (12.5 mg/day hydrochlorothiazide). This is usually all that is needed for many patients," Dr. Pratt said.

A calcium channel blocker, ACE inhibitor, or angiotensin II receptor blocker can be added if necessary. "Once you've given spironolactone, you've sort of revved up the renin-angiotensin system, and there's something for these drugs to work on," he said.

Some patients with refractory hypertension can have low-renin hypertension instead. In this disorder, patients have low renin levels but normal aldosterone levels. These patients are resistant to antihypertensive therapy but do respond to spironolactone (25-50 mg/day) or amiloride (5-10 mg/day), in combination with a diuretic, Dr. Pratt said. ■

Comorbid Dyslipidemia And HT Have High Price

BY BRUCE JANCIN
Denver Bureau

ORLANDO, FLA. — More than 12% of U.S. adults have uncontrolled comorbid hypertension and dyslipidemia, and an estimated 1 in 10 of these individuals are expected to experience a coronary heart disease event within 4 years, David Klingman, Ph.D., reported at the annual meeting of the American College of Cardiology.

That's 1.76 million people who will have coronary death, a nonfatal MI, or unstable angina. Estimated first-year direct medical costs of these CHD events is $10.5 billion, according to Dr. Klingman, director of health economics at ValueMedics Research LLC of Arlington, Va.

But nearly half of these CHD events—and the attendant economic burden on the health care system—would be avoidable through identification and treatment to goal of all individuals with uncontrolled comorbid hypertension and dyslipidemia, he added.

His Pfizer-supported study used data from the third National Health and Nutrition Examination Survey (NHANES III). Extrapolating from the findings in nearly 8,000 survey participants, he concluded that nearly two-thirds of Americans with hypertension have dyslipidemia as well.

Moreover, an estimated 17.9 million adults have uncontrolled comorbid hypertension and dyslipidemia.

Next, Dr. Klingman and coworkers added up the various cardiovascular risk factors present in each member of the NHANES III cohort. The mean age was 61.8 years, and 57% were men. Then they utilized the Framingham risk equations to determine the mean 4-year risk of a CHD event. That risk was 9.8% among individuals with uncontrolled comorbid hypertension and dyslipidemia, compared with just 1% among those with neither condition, he told this newspaper.

The 4-year CHD risk was 4.8% among individuals with uncontrolled hypertension alone, and 4.7% in normotensive individuals with uncontrolled dyslipidemia.

Breaking the data down demographically, the 4-year risk was lowest among dual-risk women aged 20-44 years, at just 3.0%. The highest 4-year risk, at 23%, was in men aged 75 or older with comorbid hypertension and dyslipidemia. That translates into more than 321,000 expected CHD events among men aged beyond 75.

The NHANES III data strongly suggest an intensive screening and treatment effort targeted at dual-risk individuals would be cost effective, the analyst said.

Coronary Artery Calcium Score May Underestimate CV Risk

BY BRUCE JANCIN
Denver Bureau

ORLANDO, FLA. — Reference norms for coronary artery calcium may be significantly lower than previously believed, Axel Schmermund, M.D., said at the annual meeting of the American College of Cardiology.

This new finding means that a fair number of patients deemed not to have a clinically significant amount of coronary artery calcium (CAC) on electron beam computed tomography (EBCT) for the detection of subclinical atherosclerosis may in truth have more than the average amount for their age—and thus may be at increased risk, explained Dr. Schmermund of the West German Heart Center at the University of Essen.

Until now, the reference standards applied throughout the world in using EBCT for the measurement of CAC as a means of stratifying coronary risk have relied principally on data from four large prospective U.S. studies. The studies involved subjects referred by their physicians or self-referred for EBCT, and hence are subject to several major types of bias.

The data raise a red flag regarding reliance on reference data based on referral populations.

DR. SCHMERMUND

Dr. Schmermund presented baseline data from the 4,259-subject Heinz Nixdorf RECALL (Risk Factors, Evaluation of Coronary Calcium and Lifestyle) study, the first large prospective study of CAC measurement in an unselected population.

"Our subjects were strictly unselected. We approached them, not the other way around," he said.

The investigators found the distribution of CAC scores in their German population–based study differed significantly from that in the U.S. studies.

"Compared with American values, the Heinz Nixdorf values for the 50th percentile are all lower, at least in the higher age groups. There is an age shift of approximately 5 years," Dr. Schmermund said.

This means, for example, that a 67-year-old man with a CAC Agatston score of 150 would be below the age-matched median using the widely cited American reference cohorts—but above the median value using the Heinz Nixdorf data as the reference norm.

Dr. Schmermund said it would be a mistake for American physicians to rely on German coronary artery calcium EBCT reference data to estimate the cardiovascular risk of U.S. patients, since the two populations differ in various ways. But the Heinz Nixdorf data raise a red flag regarding reliance on reference data that are based on referral populations. The good news, he added, is that soon American physicians will for the first time have CAC reference data obtained prospectively from an unselected, unbiased U.S. population, when the baseline data from the large prospective ongoing National Institutes of Health–sponsored Multiethnic Study of Atherosclerosis (MESA) are published.

An American observer singled out the Heinz Nixdorf study as a particularly important development in the noninvasive assessment of cardiovascular risk.

"The coronary artery calcium story has been going on for almost 15 years. One of my concerns about the technique is that the values that we've used to define normal and abnormal are always derived from highly biased cohorts of patients . . . who've been referred by their doctor for this test and who are also of a different socioeconomic status than most people. When you have an unselected prospective study like this one, it's amazing the differences you can see. I think Dr. Schmermund's study really gives us the yardstick by which the test can start to be even more useful than it's been," commented James H. Stein, M.D., director of the vascular health screening program at the University of Wisconsin, Madison. ■