Microalbuminuria Increases Risk for Heart Attacks and Strokes in Hypertensive Patients

What is the problem and what is known about it so far?
High blood pressure (hypertension) is a chronic condition that damages blood vessels and body organs. It increases the risk for heart attacks, heart failure, strokes, and kidney failure. Some people with high blood pressure lose small amounts of protein in the urine (microalbuminuria). Also, some people with high blood pressure get thickened heart muscle (left ventricular hypertrophy). Both microalbuminuria and left ventricular hypertrophy increase risks for adverse outcomes such as heart attacks and strokes. However, researchers debate whether risks associated with microalbuminuria increase in a continuous, linear manner as levels of microalbuminuria increase or whether increased risks occur only when levels of microalbuminuria reach a particular point or threshold. It is also unclear whether the risk increases less than previously reported.

Why did the researchers do this particular study?
To study levels of microalbuminuria associated with increased risk for heart attacks and strokes in patients with hypertension and left ventricular hypertrophy.

Who was studied?
8206 adults with mild to moderate hypertension who had participated in a trial that compared 2 antihypertensive therapies.

How was the study done?
Researchers used information from a randomized trial that was originally designed to compare the benefits of 2 antihypertensive agents (losartan and atenolol) in patients with high blood pressure and left ventricular hypertrophy. Of 9193 patients in the trial, 8206 had morning urine samples tested for microalbuminuria when they started the study. Researchers followed patients for about 5 years to see if any had fatal or nonfatal heart attacks or strokes. In this substudy, the researchers combined patients who were treated with the 2 agents into 1 group. They then looked at the levels of microalbuminuria in patients who did and did not have heart attacks and strokes.

What did the researchers find?
Increasing levels of microalbuminuria were associated with increasing risks for heart attacks and strokes. Risks continuously increased in a linear manner. There was no evidence of a specific threshold point below which there was no risk. Increases in the risk for death, heart attacks, and strokes were much lower than previously reported.

What were the limitations of the study?
Microalbuminuria was assessed with a single urine albumin–creatinine ratio obtained at baseline. The study was based on data collected during a randomized, controlled trial of antihypertensive therapy. No adjustments were made for treatments that patients received during the trial, and some treatments could have affected both microalbuminuria level and risk for strokes and heart attacks.

What are the implications of the study?
Microalbuminuria increases risks for cardiovascular disease in hypertensive patients with left ventricular hypertrophy in a continuous, linear manner but at much lower levels than reported in other studies.