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Elevated level of certain protein in urine linked to increased risk for blood clots

CHICAGO – Preliminary research suggests that higher than normal levels of the protein albumin in urine is associated with an increased risk for blood clots in the deep veins of the legs or lungs (venous thromboembolism; VTE), according to a study in the May 6 issue of *JAMA*.

The overall incidence of VTE in developed countries is about 0.15 percent per year, varying from less than 0.005 percent in individuals younger than 15 years to as high as 0.5 percent at 80 years of age. Known risk factors for VTE include stasis (a slowing of the normal flow) of the blood and changes in the composition of the blood. However, in as many as 50 percent of VTE cases, none of the known risk factors are present, according to background information in the article.

Microalbuminuria (albumin in urine; 30-300 mg per 24-hour urine collection) is associated with changes in the levels of several coagulation proteins. The effect of coagulation disorders is more evident in the development of VTE than of arterial thromboembolism (formation of a blood clot in the arterial system). "Hence, in theory, a link between microalbuminuria and VTE is likely; however, research addressing this issue has yet to be conducted," the authors write.

Bakhtawar K. Mahmoodi, B.Sc., of the University Medical Centre Groningen, the Netherlands, and colleagues conducted a study to assess whether microalbuminuria is associated with VTE. The ongoing, community-based study, started in 1997, includes all inhabitants of Groningen, the Netherlands, (age 28 through 75 years [$n = 85,421$]) who were sent a postal questionnaire and a vial to collect a urine sample for measurement of urinary albumin concentration. Of those who responded (40,856), a group (8,592) including more participants with higher levels of urinary albumin concentration completed screening at an outpatient clinic. Screening data were collected on urinary albumin excretion (UAE) and risk factors for cardiovascular and kidney disease.

Of 8,574 evaluable participants (average age, 49 years; 50 percent men), 129 developed at least 1 VTE during an average observation period of 8.6 years, corresponding to an annual

incidence of 0.14 percent, ranging from 0.12 percent in participants with UAE of less than 15 mg/24 h to 0.56 percent in participants with UAE of greater than 300 mg/24 h. These annual incidences were 0.40 percent in microalbuminuric vs. 0.12 percent in normoalbuminuric participants (UAE less than 30 mg/24 hour urine collection).

During 8 years of follow-up, 3 percent of microalbuminuric participants and 1 percent of normoalbuminuric participants developed VTE. The most commonly encountered first VTE was deep vein thrombosis (57 percent; a blood clot in a deep vein in the thigh or leg), followed by pulmonary embolism (34 percent; a blood clot in a blood vessel in the lungs), and combined deep vein thrombosis and pulmonary embolism (9 percent).

"The fact that microalbuminuria has a high prevalence in the general population (7.2 percent) suggests that on the population level, microalbuminuria may be an important risk factor for VTE. Moreover, in contrast to most of the established VTE risk factors, microalbuminuria could be treated by nonanticoagulant medication. Future studies are needed to evaluate the effect of these drugs on the risk of VTE," the authors write.

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