Medical Xpress

Kidney disease affects response to blood thinner

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Patients with reduced kidney function require lower doses of the anticoagulant drug warfarin, and may need closer monitoring to avoid serious bleeding complications, suggests a study in the April 2009 issue of the *Journal of the American Society of Nephrology* (*JASN*).

Among patients who take blood thinner there is a high prevalence of reduced kidney function, ranging from mild to severe. "Although warfarin is very effective in protecting against blood clots it can also cause serious bleeding complications," commented lead author Nita A. Limdi, PharmD, PhD, of the University of Alabama at Birmingham. "The information in our study may help doctors customize warfarin management in patients with kidney failure and lower the risk of complications," commented Michael Allon, MD, also of the University of Alabama at Birmingham.

The researchers evaluated responses to warfarin, the most widely used oral anticoagulant drug, in 578 patients. About 60 percent of the patients had normal or mildly reduced kidney function. Another 30 percent had moderate reductions in kidney function, common in older adults. The remaining patients, nearly ten percent, had kidney failure requiring dialysis.

Warfarin dose was significantly affected by kidney function. The influence of kidney function remained significant even after accounting for medications and the two genes (CYP2C9 and VKORC1) that have been shown to influence warfarin dose. For dialysis patients with kidney

failure, a lower dose of warfarin achieved the desired blood-thinning effect. Patients with kidney failure were also more likely to develop serious bleeding complications related to warfarin, regardless of other risk factors. "Patients with renal failure may require closer monitoring to maintain their warfarin in the desired range," said Dr. Limdi.

Even moderately reduced kidney function affected patients' response to blood thinner. These patients also required a lower dose of warfarin, although they were not at increased risk of serious bleeding. The results have important implications for a large proportion of patients who take warfarin. "Warfarin therapy is prescribed and managed similarly in patients with reduced kidney function as in the general medical population," according to Dr. Allon. "However, in our study patients with reduced renal function and renal failure required lower doses. Forty percent of study participants fell into these categories. This highlights that kidney function may be an important factor to consider in patients being prescribed warfarin," said Dr. Limdi.

Patients with kidney failure are at higher risk of serious bleeding. "Further studies are required to understand the harm and benefit associated with warfarin therapy in patients with kidney failure," said Dr. Limdi.

The study had some important limitations, including a lack of data on patients who developed blood clots despite being on warfarin. "Therefore we hesitate to recommend the use of kidney function in making treatment decisions," Dr. Limdi added. "Perhaps ongoing and future research efforts evaluating both clotting and bleeding events will enable more balanced clinical decision making in this unique and medically challenging patient population."

More information: The article, entitled "Kidney Function Influences Warfarin Responsiveness and Hemorrhagic Complications," will appear

online at jasn.asnjournals.org/ on Wednesday, February 18, 2009, doi 10.1681/ASN.2008070802

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