Drug does not increase suitability for dialysis of surgically-enlarged blood vessels

May 13 2008

The anti-platelet drug clopidogrel reduced the frequency of early blood clot formation in new surgically enlarged blood vessels (fistulas) created for patients requiring dialysis, but did not increase the proportion of these fistulas that subsequently became suitable for use during dialysis, according to a study in the May 14 issue of JAMA.

“Approximately 470,000 Americans have end-stage renal disease, and most are treated with hemodialysis. A major challenge in caring for patients undergoing hemodialysis is maintaining a functioning vascular access, which is essential for performing the dialysis procedure. The effect of vascular access dysfunction is substantial—it is a leading reason for hospitalization among patients with end-stage renal disease and has associated annual costs in the United States that exceed $1 billion,” the authors write.

The preferred type of hemodialysis vascular access is an arteriovenous fistula, created by surgically connecting an artery and a vein. This arteriovenous connection and the resulting increase in the blood flow through the vein cause its diameter to increase, enabling the typically thrice weekly vein puncture necessary for administering dialysis. The fistula is preferred over other types of hemodialysis vascular access such as synthetic arteriovenous grafts because of lower rates of blood clot formation (thrombosis) and infection as well as reduced access-related and total health care expenditures. Offsetting these advantages is the substantially higher proportion of fistulas than grafts that are never able to be used for dialysis because of failure to mature adequately to support

effective hemodialysis, according to background information in the article. Some small trials have suggested that anti-platelet drugs may reduce thrombosis of new fistulas.

The Dialysis Access Consortium, including Laura M. Dember, M.D., of the Boston University School of Medicine, and colleagues performed a multicenter, randomized, placebo-controlled trial to determine whether clopidogrel reduces early failure of hemodialysis fistulas. The study included 877 participants with end-stage renal disease or advanced chronic kidney disease who underwent surgical creation of a fistula. Participants were randomly assigned to receive clopidogrel (n = 441) or placebo (n = 436) for 6 weeks starting within 1 day after fistula creation.

The researchers found that participants in the clopidogrel group had a 37 percent lower risk of fistula thrombosis at 6 weeks compared to participants in the placebo group. Among the 866 participants who had fistula patency (lack of obstruction) assessed, 53 participants (12.2 percent) in the clopidogrel group experienced fistula thrombosis, compared to 84 participants (19.5 percent) in the placebo group.

However, among the 86 percent of fistulas assessed for suitability for use during dialysis, the percentage with suitability failure was high and did not differ between the clopidogrel group and the placebo group (61.8 percent vs. 59.5 percent, respectively).

“In conclusion, clopidogrel reduces the incidence of early thrombosis of new arteriovenous fistulas but does not increase the proportion that become suitable for dialysis. The high rate of fistula suitability failure observed in this large trial conducted at centers with a particular interest in hemodialysis vascular access provides a compelling argument for additional efforts to identify mechanisms underlying fistula maturation failure, criteria for selecting suitable candidates for fistula creation, and interventions to enhance fistula maturation,” the authors write.