Anemia, Renal Damage Raise Post-PCI Mortality

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TORONTO — Both anemia and renal impairment raise the risk of death in patients undergoing percutaneous coronary interventions.

In a review of 572 patients, those whose serum creatinine level spiked by 25% or more following percutaneous coronary intervention (PCI) for a myocardial infarction had about a threefold increased risk of dying during the first 15 months after their procedure, compared with patients who didn't have this sign of renal dysfunction, Dr. Alexander Goldberg said at the 14th World Congress on Heart Disease. Patients faced an increased risk for death post-PCI regardless of whether their rise in serum creatinine was transient or prolonged, noted Dr. Goldberg, director of interventional cardiology at Sieff Government Hospital in Safed, Israel.

In patients with impaired left ventricular function, those who were anemic were about four times more likely to die following PCI than did those who were not anemic in a review of 120 patients, Dr. Amit Varma reported in a separate talk at the congress.

The impact of a rise in serum creatinine after PCI was examined in consecutive patients who underwent primary PCI for a MI at Sieff Government Hospital. Stable renal function, defined as a serum creatinine level that did not rise by more than 25% after the procedure, occurred in 76% of the patients. Persistently impaired renal function occurred in 13%, which meant their serum creatinine rose by more than 25% after PCI and remained elevated over time, while 11% had transient worsening that resolved, with their serum creatinine briefly rising by more than 25% but then falling before they left the hospital.

During a median follow-up of 15 months, the mortality rate was 16% in patients with transiently impaired renal function, 12% in those with persistent renal impairment, and 4% in those with no renal impairment. The increased mortality rates in the two groups with substantial rises in creatinine were significantly higher than the rate in the patients without this rise. In a multivariate analysis that controlled for differences in age, gender, baseline creatinine levels, hypertension, diabetes, Killip class on hospital admission, and other variables, patients with transient worsening renal function had a significant, 3-fold increased risk of dying, and those with persistently worse renal function had a significant, 2.6-fold increased risk of death, compared with the patients whose creatinine level did not spike, Dr. Goldberg said at the congress sponsored by the International Academy of Cardiology.

It was surprising that transient renal impairment led to a prognosis as poor as persistent impairment, he said. It is also unclear how renal impairment can be avoided in these patients.

The impact of anemia in patients undergoing PCI was examined in 120 patients with a left ventricular ejection fraction of less than 45% who were treated with PCI during April 2003–December 2005 at Virginia Commonwealth University. All patients received drug-eluting stents. Twenty-nine patients (24%) were anemic, defined as a hemoglobin level of less than 12 g/dL in men and postmenopausal women. The anemic patients were further subdivided by their type of deficiency: 13 patients (11%) had iron-deficiency anemia, 9 (8%) had anemia of chronic disease, and 7 (6%) had malignancy-associated anemia (total adds up to 25% because of rounding).

During a median follow-up of 30 months, the mortality rate was 8% in the nonanemic patients and 34% in the anemic patients, reported Dr. Varma, a cardiologist at Virginia Commonwealth University in Richmond. Anemia remained a significant predictor of mortality even after adjusting for baseline differences in the patient groups. In patients with the worst anemia, a hemoglobin level of 10 g/dL or less, the mortality rate was 45%.

The incidence of cardiac mortality was greatest, about 60%, in patients with iron deficiency anemia. None of the patients had bleeding complications following PCI; the iron deficiency anemia was not the result of bleeding. The incidence of noncardiac death was greatest, also about 60%, in patients with malignancy-associated anemia. In contrast, the patients with anemia of chronic disease did "remarkably well," with none of these patients dying during follow-up, Dr. Varma said. ■