Anemia treatment improves heart structure and quality of life in kidney disease patients

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In chronic kidney disease patients, different levels of anemia treatment have a beneficial effect on the heart and improve quality of life, according to a pair of studies appearing in the April 2009 issue of the *Clinical Journal of the American Society Nephrology* (CJASN). The findings indicate that different levels of treatment may be warranted for different patients.

Patients with chronic kidney disease often have low levels of erythropoietin (a hormone that stimulates the formation of red blood cells) and develop anemia. Anemia can cause enlargement of the heart, predisposing individuals to heart failure and death. Synthetic erythropoietin partially corrects anemia, and doctors prescribe it to try to increase patients' hemoglobin levels to 10-12 g/dl (hemoglobin is the predominant protein in red blood cells). Prescribing higher levels of erythropoietin may result in normal hemoglobin levels (greater than 13 g/dl), but recent clinical trials suggest that this may cause serious adverse effects, including death.

Two recent studies by Patrick Parfrey, MD (Memorial University of Newfoundland), and colleagues examined the effects of different levels of anemia treatment on heart structure and quality of life in chronic kidney disease patients.

The first study was a systematic review of published data on the effects of anemia on the heart. By analyzing 15 available studies involving 1,731 patients with kidney disease, the investigators found that partial

correction of severe anemia with erythropoietin improved heart structure, but fully correcting anemia provided no additional benefit.

The second study assessed whether normalization of hemoglobin improves quality of life in kidney disease patients. The study was conducted because anemia-induced fatigue is a prominent symptom in patients with kidney disease. In a randomized trial performed in Canada and Europe, Dr. Parfrey and his team enrolled 596 relatively healthy patients starting dialysis. The researchers found that patients experienced less fatigue when they were treated with erythropoietin to reach a normal hemoglobin level compared with patients who were treated to achieve only partial correction of anemia.

Erythropoietin therapy can provide some benefits (such as reduced fatigue), but investigators concluded that the recommended hemoglobin target range is 10-12 g/dl. Treating patients to reach a normal hemoglobin level (>13 g/dl) does not improve heart structure and can cause significant harm to patients.

"It is possible that patients at low risk of an adverse side effect from erythropoietin therapy would value the improvement in quality of life provided by the higher hemoglobin level," said Dr. Parfrey. "However the cost of this improvement in quality of life will be high, because erythropoietin is expensive," he added.

The authors noted that a large clinical trial (TREAT) of 4,000 diabetic patients with chronic kidney disease will end this year and should provide additional information on the benefits and harms of prescribing erythropoietin to achieve a normal hemoglobin level.

More information: The articles, entitled "Erythropoietin Therapy and Left Ventricular Mass Index in CKD and ESRD Patients: A Meta-Analysis" (doi 10.2215/CJN.02730608) and "Erythropoietin Therapy,

Hemoglobin Targets, and Quality of Life in Healthy Hemodialysis Patients: A Randomized Trial," (doi 10.2215/CJN.04950908) will appear online at cjasn.asnjournals.org/ on April 1, 2009.

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