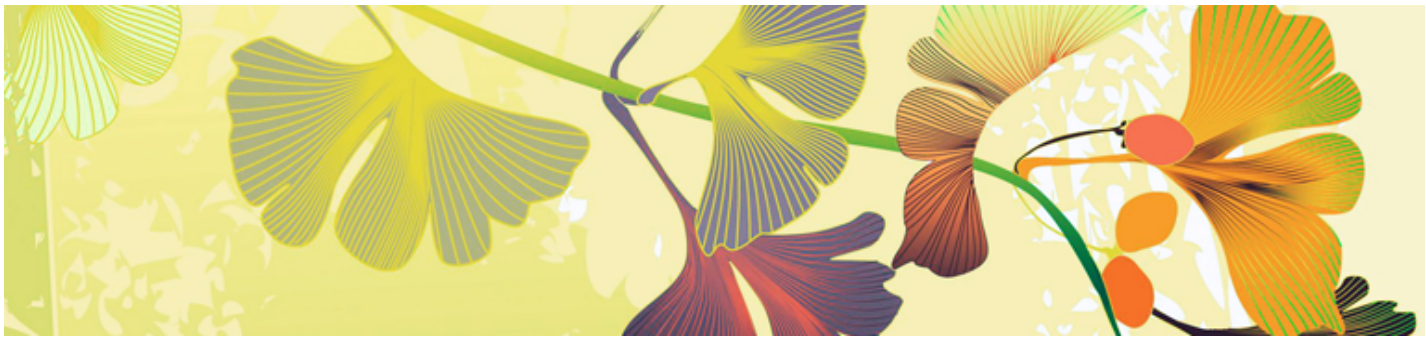

Introduction to and Treatment of Renal Anemia

腎性貧血的認識與治療(英文)

Definition:

Hematopoiesis requires two major materials, namely Erythropoietin (EPO) and iron.

Erythropoietin is produced by kidney, added with iron following blood circulation, and then transported to the bone marrow for hemoglobin synthesis. The kidneys of patients with renal failure are destroyed and could not produce sufficient EPO, resulting in anemia in general.

Anemia has wide effects on patients of dialysis, including the reduction of exercise tolerance, work competence, appetite, and living quality. Hence the goal for patients of dialysis is to maintain Hematocrit (HCT) between 30 ~ 34.5% and hemoglobin (Hgb) between 10~ 11.5 g/dl.

The main reason for anemia among patients of renal failure includes:

·Insufficient hemoglobin production (insufficient EPO).

·Shortened lifecycle for red cells (the average life for the red cells of normal people is 120 days while that of patients of dialysis is only between 70-80 days).

·Lack of iron.

·Lack of folic acid or vitamin B12.

·Gastrointestinal bleeding, black stool or Stool Occult Blood is positive.

·Poor nutrients.

Anemia Treatment

The rule to treat renal anemia is to maintain the hemoglobin (Hgb) of patients between 10~ 11.5 g/dl and hematocrit (Hct) between 30 ~ 34.5%.

The evaluation of physician on patients of anemia includes the tests on stool occult blood, Hgb, reticulocyte count, and iron storage of the body.

EPO is often used for treatment on renal anemia, where some patients may develop cold symptoms such as muscular ache during treatment. The onset time usually occurs in 60-90 minutes after IV injection. The symptoms are not serious and may disappear after the

continuous use of EPO. These side effects less likely occur under subcutaneous injection. Another important side effect is high blood pressure, which frequently occurs among 20~30% of patients when the Hgb is higher than 11 g/dl. With physician instruction, the dosage of EPO is changed or medicine for lower blood pressure is increased to treat the side effects of high blood pressure.

Hgb and Hct should be routinely traced after EPO use. If anemia does not improve after EPO treatment for 2~4 weeks, EPO dosage should be increased but contrary can be reduced when reaching the Hgb goal.

When should iron be supplemented? If the patients' transferrin saturation is lower than 30 % or if ferritin falls under 500ng/ml, iron treatment should be started.

When transferrin saturation is higher than 30 % or is ferritin is higher than 500ng/ml, iron treatment should be suspended and re-evaluated after 3 months to avoid excess iron in the body. However adjustment should be made for individual cases.

The most important rule to treating renal anemia is sufficient dialysis.

Patients should consult with nutritionist for sufficient supplement of liver, internal organs, egg yolk, milk, lean meat, shells, seaweed, beans, grains, resins, and green vegetables as well as other food for source of iron.

Conclusion

Anemia is one common problem among patients of chronic renal diseases. Sufficient dialysis, proper supplement of EPO and iron can resolve most anemias. In case the patients discover anemia that could not be easily improved, the patients need to search for the cause carefully for correction.

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