



Odgada li rano liječenje anemije bubrežnu bolest?

Does early treatment of anemia delay kidney diseases?

Vesna Lovčić

Bjelovar General Hospital, Bjelovar

Kronična bubrežna bolest je oštećenje bubrega ili smanjenje bubrežne funkcije, tj. glomerularne filtracije na <60 ml/min/1,73 m² duže od tri mjeseca.

Oštećenje bubrega znači patološki nalaz pregleda mokraće, biokemijskih pretraga krvi, nalaza rendgenske ili neke druge slikovne dijagnostike te biopsije bubrega.

Kronično zatajenje bubrega je klinički sindrom koji označava progresivno i trajno propadanje nefrona što dovodi do zatajenja svih bubrežnih funkcija: ekskretorne, endokrine i metaboličke. Glavni kriterij za određivanje stadija kronične bubrežne bolesti je veličina odnosno smanjenje glomerularne filtracije na osnovi koje razlikujemo pet stupnjeva.

Obično u trećem stadiju, u kojem je glomerularna filtracija umjereno smanjena (30-59 ml/min/1,73 m²), dolazi do razvoja anemije koja se pogoršava s progresijom bubrežnog zatajenja.

Anemija je smanjenje količine hemoglobina, odnosno volumena eritrocita u cirkulaciji, s odgovarajućim smanjenjem kapaciteta prijenosa kisika i jedna od vrlo važnih i čestih komplikacija u kroničnom bubrežnom zatajenju. Morfološko obilježje eritrocita su normokromnost i normocitnost, a serumska koncentracija željeza, razina transferina, serumskog feritina i transferinska saturacija su obično normalni.

Nedovoljno stvaranje eritropoetina je primarni i najvažniji etiološki činitelj bubrežne anemije. Eritropoetin izlučuje peritubularne stanice bubrega kao odgovor na hipoksični stimulus čije bazalne vrijednosti u humanoj plazmi iznose 15-25 mU/ml. Humani rekombinantni eritropoetin

Chronic kidney disease is the result of kidney failure or a reduction of the kidneys function, i.e. glomerular filtration rate of <60 ml/min/1.73m² lasting more than three months.

Renal disease means a pathological finding in the urine, biochemistry blood tests, X-ray or some other imaging diagnostic methods and a biopsy of the kidneys.

Chronic kidney failure is a clinical syndrome which means progressive and permanent nephron degeneration, leading to the failure of all kidneys functions: excretory, endocrine and metabolic. The main criteria for determining the stage of chronic kidney disease is the size or reduction of glomerular filtration based upon we differentiate five stages.

Ordinarily, in the third stage glomerular filtration is slightly reduced (30-59 ml/min/1.73 m²), and there occurs the development of anemia which progressively deteriorates kidney failure.

Anemia is a reduction in the quantity of hemoglobin or the volume of circulating erythrocytes, with a respective reduction in the capacity to transfer oxygen and is one of very important and frequent complications in chronic kidney failure. The morphological characteristics of erythrocytes are normochromic and normocytic features, while the serum concentration of iron, the level of transferrin, serum ferritin and transferrin saturation are usually normal.

The insufficient creation of erythropoietin is the primary and most important etiological cause of renal anemia. Erythropoietin secrete peritubular cells in the kidney as a result of hypoxic stimulus whose basal values in human plasma amount to 15-25 mU/ml. Human recombi-



(rHuEPO) je lijek koji unosimo u organizam intraveniski ili subkutano u nedostatku endogenog eritropoetina. To je biosintetički oblik glikoproteinskog hormona. Lijek se priprema na kulturi genski modificiranih stanica sisavaca (ovarijske stanice hrčka) tehnologijom rekombinantne DNA.

Simptomi anemije se često pojavljuju kod vrijednosti hemoglobina nižih od 95 g/L a hematokrita nižeg od 0,30.

Brojna su predklinička ispitivanja rHuEPO-a na životinjskim modelima koja ukazuju na njegovu reno- i kardioprotektivnu ulogu.

Anemija povisuje rizik bolesti koronarnih arterija u bolesnika s kroničnom bolesti bubrega, a patofiziološki proces hipertrofije lijeve klijetke uslijed anemije i hipertenzije poznat je od ranije.

Glavni uzroci nedostatnog odgovora na liječenje eritropoetinom su manjak željeza, infekcija/upale, kronični gubitak krvi, sekundarni hiperparatireoidizam, manjak folne kiseline i vitamina B₁₂. Nuspojave liječenja eritropoetinom su porast arterijskog tlaka ili pogoršanje hipertenzije i tromboza krvožilnog pristupa.

Brojni su klinički pokusi u bolesnika u predijaliznom razdoblju koji potvrđuju da rano liječenje bubrežne anemije prevenira promjene u kardiostrukтури, a time i funkciji te nepoželjna srčanožilna događanja s ciljem poboljšanja kvalitete života i smanjenja smrtnosti tih bolesnika.

Received: 1st Oct 2008

E-mail: vesna.lovacic@bj.t-com.hr

nant erythropoietin (rHuEPO) is a medication which we administer to the organism intravenously or subcutaneously in the event of insufficient endogenous erythropoietin. This is a biosynthetic form of glycoprotein hormone. The medication is prepared in a culture of genetically modified mammal cells (hamster ovarian cells) using recombinant DNA technology.

The symptoms of anemia often occur for values of hemoglobin lower than 95 g/L while hematocrit is less than 0.30.

Numerous preclinical testing of rHuEPO on animal models suggest its reno- and cardioprotective role.

Anemia increases the risk of coronary artery disease in patients with chronic renal disease, while the pathophysiological process of hypertrophy of the left atrium caused by anemia and hypertension is already known.

The main causes of an inadequate answer to treatment with erythropoietin are insufficient iron, infections/inflammations, chronic loss of blood, secondary hyperparathyroidism, insufficient folic acid and vitamin B₁₂. Negative side-effects of treatment by using erythropoietin are increases in blood pressure or an increase in hypertension and thrombosis of cardiovascular approach.

Numerous clinical trials in patients in the predialysis period confirm that an early treatment of renal anemia prevents changes in the cardiac structure, and therefore the functioning and undesired cardiovascular events all aimed at improving the quality of life and reducing the mortality rate in such patients.