

**MEASURING THYROGLOBULIN CONCENTRATIONS IN PATIENTS
WITH DIFFERENTIATED THYROID CARCINOMA****MERENJE KONCENTRACIJE TIREOGLOBULINA KOD PACIJENATA
SA DIFERENTOVANIM KARCINOMIMA ŠTITASTE ŽLEZDE***Svetlana Savin¹, Dubravka Cvejić¹, Ljiljana Mijatović², Snežana Živančević Simonović²*¹*Institute for the Application of Nuclear Energy – INEP, University of Belgrade, Zemun-Belgrade, Serbia*²*Faculty of Medicine, University of Kragujevac, Kragujevac, Serbia*

Summary: Thyroid carcinomas are the most common malignant endocrine tumors. Thyroglobulin (Tg), a specific thyroid protein, is the most important tumor marker in thyroid oncology. After total thyroidectomy or radioiodine therapy, detectable or increasing serum Tg levels in patients with differentiated thyroid carcinoma indicate persistence of active thyroid tissue or cancer recurrence. Serum Tg concentration primarily reflects three variables: the mass of differentiated thyroid tissue present; the degree of thyrotropin receptor stimulation and the intrinsic ability of the tumor to synthesize and secrete Tg. Measurement of serum Tg by current immunometric (IMA) and radioimmunological (RIA) assays encounters some methodological problems which can diminish its clinical importance. Discrepancy between the results for Tg using different methods may be caused by: different reference materials, specific properties of the primary and secondary antibodies for antigenic determinants on Tg and diverse binding affinities of these epitopes, together with interference by serum factors (usually antibodies to Tg (TgAb)) with the primary and secondary Tg antibodies from the diagnostic set. In the presence of endogenous TgAb, Tg values measured by immunoradiometric assay (IRMA) and similar assays are usually lower than the real concentrations, while in RIA apparently lower or higher results can be obtained. Falsely low values may lead to delay in necessary treatment, while an inappropriately high Tg value can cause patient anxiety and unnecessary scans. Despite current methodological limitations, serum Tg measurement is a useful test for determining worsening disease and monitoring the effects of therapy in patients who have undergone surgery for differentiated thyroid carcinoma.

Keywords: antithyroglobulin autoantibodies, differentiated thyroid carcinoma, immunometric assay, thyroglobulin

Kratak sadržaj: Tiroidni karcinomi su najčešći maligni endokrini tumori. Tireoglobulin (Tg), specifični protein štitaste žlezde, najvažniji je tumorski marker u tireoidnoj onkologiji. Kod pacijenata sa diferentovanim karcinomima tireoideje, nakon operativnog lečenja, koncentracija Tg određuje se radi otkrivanja rezidualnog tumorskog tkiva ili postojanja lokalnih, odnosno udaljenih metastaza. Na koncentraciju Tg u serumu utiču: masa prisutnog tireoidnog tkiva (benignog ili malignog), intenzitet stimulacije receptora za tireostimulišući hormon (TSH) i sposobnost tumorskih ćelija da sintetišu i luče Tg. Savremene metode, imunometrijske (IMA) i radioimunološke (RIA), kojima se određuje koncentracija Tg u serumu ispitanika, imaju određena ograničenja koja mogu da umanje klinički značaj dobijenih rezultata. Usled metodoloških razlika, koncentracije Tg u istim uzorcima seruma, izmerene različitim testovima, mogu se razlikovati. Faktori koji mogu prouzrokovati razlike u izmerenim koncentracijama Tg su brojni: različiti referentni materijali, razlike u specifičnosti primarnih i sekundarnih antitela za antigenske determinante Tg, različit afinitet vezivanja tih antitela za epitope Tg, i interferencija serumskih faktora. Princip testa, kao i eventualno prisustvo TgAt u serumima ispitanika, može uticati na izmerenu koncentraciju Tg. Svako odstupanje izmerenih koncentracija Tg od stvarnih vrednosti može imati ozbiljne posledice: lažno niske vrednosti Tg mogu odložiti neophodni tretman pacijenata, dok lažno povećane vrednosti Tg mogu prouzrokovati nepotrebnii stres, ili čak tretman pacijenata. I pored ograničenih mogućnosti savremenih metoda, određivanje koncentracije Tg u serumu pacijenata operisanih od diferentovanog tiroidnog karcinoma je koristan test za otkrivanje pogoršanja bolesti i za praćenje efekata terapije.

Ključne reči: diferentovani tireoidni karcinom, imunometrijski test, tireoglobulin, tireoglobulinska antitela

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