God. 3, br. 1

ISSN 2406-0569

ANALI KANCEROLOŠKE SEKCIJE SLD

53. Kancerološka nedelja i

30. Simpozijum medicinskih sestara – tehničara onkoloških institucija Republike Srbije

Beograd, 4 - 5. novembar 2016.

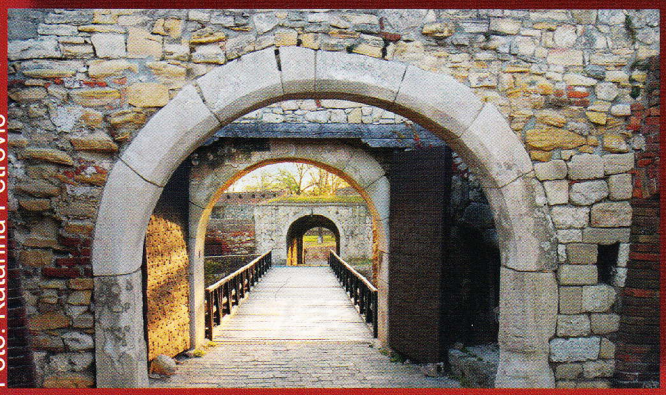

Foto: Katarina Petrović

jsku dozu. Drugo važno pitanje je šta raditi sa pacijentima koji u postterapijskim kontrolama imaju visoke vrednosti tireoglobulina u uslovima TSH stimulacije, a na kontrolnoj scintigrafiji celog tela 131I (WBS) se jodavidno tkivo ne prikazuje. Kod njih je indikovano uraditi okterosken i ukoliko tumorske ćelije kod tih pacijenata na membranama eksprimiraju somatostatinske receptore, tumorsko tkivo u rest/recidivu ili metastazama će se vizualizovati. Pozitivan nalaz oktreoskena otvara mogućnost za primenu PRRT (peptide receptor radionuclide therapy) 99Y-DOTATOC ili 177Lu-DOTATATE. Naša iskustva su pokazala značajno sniženje vrednosti tireoglobulina kod ovih pacijenata.

Ključne reči: diferentovani karcinomi štitaste žlezde, radioaktivni jod, terapija

RADIOACTIVE IODINE (^{131}J) THERAPY IN PATIENTS WITH WELL-DIFFERENTIATED THYROID CARCINOMA

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Therapy by radioactive iodine (^{131}I) has an important role in a postoperative treatment of well-differentiated thyroid carcinoma (WDTC), due to the fact that the tumor cells still have the ability to take iodine (including radioactive iodine ^{131}I) by Na^+/I^- symporter.

The aim of the lecture is to draw attention to indications in which radioiodine therapy is the most successful, as well as to indications where it is less successful. Although thyroglobulin, as a tumor marker becomes valid only after the ablation of residual thyroid tissue by radioiodine, there are patients who do not need the application of radioactive iodine therapy.

The attention will be paid to the most recent recommendations of the Society of Nuclear Medicine (SNM), the European Association of Nuclear Medicine (EANM), and the American Thyroid Association related to the risk assessment factors. The dilemmas of the multidisciplinary team will be also considered. The following is one of the most common dilemmas: is it necessary to perform postoperative whole-body radioiodine scintigraphy? In patients that will be treated by the ^{131}I, it would be better to perform WBS after the therapy, due to the potential stunning phenomenon.

Another important issue is related to the patients who have high thyroglobulin levels in terms of TSH stimulation, and no ^{131}I uptake during the whole body scintigraphy (WBS). The octreo scan should be performed in this case. Positive octreo-scan opens the possibility for patients to be treated by the PRRT (peptide receptor radiotherapy) by ^{99}Y-DOTATOC or ^{177}Lu-DOTATATE. Our experiences have shown a significant reduction of thyroglobulin levels in these patients.

Key words: differentiated thyroid cancer, radioiodine (^{131}I), therapy

CITOKINSKI PROFIL KOD PACIJENATA SA DIFERENTOVANIM KARCINOMOM ŠTITASTE ŽLEZDE

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Uvod. Citokini imaju ključnu ulogu u regulaciji funkcije ćelija imunskog sistema. Pored toga, mogu biti uključeni u patogenezu malignih bolesti. Cilj ovog rada je da se ispita citokinski profil kod pacijenata sa diferentovanim karcinomom štitaste žlezde (engl. differentiated thyroid cancer, DTC) pre i 7 dana nakon terapije radioaktivnim jodom 131 (131-I).

Metode. Koncentracija citokina je određivana u uzorcima seruma i u supernatantima ćelija periferne krvi koje su stimulisane fitohemaglutininom (PHA) u *in vitro* uslovima. Za merenje koncentracije citokina korišćen je komercijalni kit (Human Th1/Th2/Th9/Th17/Th22 13plex, FlowCytomix Multiplex (ebioscience Cat. No. BMS817FF) prilagođen za upotebu na floucitometru FC500 Beckman Coulter prema uputstvu proizvođača. Rezultati su analizirani uz pomoć softverskog paketa FlowCytomix™ Pro 3.0.

Rezultati. Serumska koncentracija nekoliko proinflamatornih, antiinflamatornih i T-helper 2 (Th2) citokina veća je kod pacijenata sa dokazanim metastazama i/ili povećanim koncentracijama tireoglobulina (Tg). Fitohemaglutininom-stimulisane ćelije periferne krvi pacijenata sa DTC u *in vitro* uslovima produkuju veće koncentracije T-helper 2 / T-helper 9 (Th2/Th9) citokina nego kontrolni ispitanici. Terapija radioaktivnim jodom 131-I vodi smanjenju sekrecije Th2 citokina.

Zaključak. Naši rezultati ukazuju na to da serumska koncentracija nekih proinflamatornih, antiinflamatornih i Th2 citokina ukazuje na stadijum bolesti. Terapija radioaktivnim jodom 131 vodi smanjenju sekrecije Th2 citokina.

Ključne reči: citokini, diferentovani karcinom štitaste žlezde, terapija radioaktivnim jodom

CYTOKINE PROFILE IN PATIENTS WITH DIFFERENTIATED THYROID CANCER

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Introduction. Cytokines play a key role in the regulation of cells of the immune system and also have been implicated in the pathogenesis of malignant diseases. The aim of this study was to evaluate cytokine profiles in patients with differentiated thyroid cancer (DTC) before and 7 days after radioactive iodine (131-I) therapy.

Methods. Cytokine levels were determined in serum samples and supernatants obtained from phytohemagglutinin (PHA)-stimulated whole blood cultures using a commercial flowcytometric kit (Human Th1/Th2/Th9/Th17/Th22 13plex, FlowCytomix Multiplex (ebioscience Cat. No. BMS817FF) on a FC500 Beckman Coulter Flow Cytometer according to the manufacturer's instructions. Collected data were analyzed using FlowCytomix™ Pro 3.0 Software.

Results. The serum levels of several pro-inflammatory, anti-inflammatory and T-helper 2 (Th2) cytokines were higher in patients with proven metastasis and/or increased thyroglobulin (Tg) concentrations. PHA-stimulated peripheral blood cells of DTC patients *in vitro* produce significantly higher concentrations of T-helper 2 / T-helper 9 (Th2/Th9) cytokines than control subjects. The 131-I therapy led to reduced secretion of Th2 cytokines.

Conclusion. Our results indicate that serum levels of some pro-inflammatory, anti-inflammatory and Th2 cytokines reflect the stage of the disease. The radioactive 131-I therapy leads to reduced secretion of Th2 cytokines.

Key words: cytokines, differentiated thyroid cancer, radioactive iodine therapy