



## Risk factors for brain metastases in surgically staged IIIA non-small cell lung cancer patients treated with surgery, radiotherapy and chemotherapy

Faktori rizika od pojave metastaza u mozgu kod bolesnika sa stadijumom IIIA nemikrocelularnog karcinoma pluća lečenih hirurški, zračenjem i hemioterapijom

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### Abstract

**Introduction/Aim.** Lung cancer is a leading cause of mortality among patients with carcinomas. The aim of this study was to point out risk factors for brain metastases (BM) appearance in patients with IIIA (N2) stage of non-small cell lung cancer (NSCLC) treated with three-modal therapy. **Methods.** We analyzed data obtained from 107 patients with IIIA (N2) stage of NSCLC treated surgically with neoadjuvant therapy. The frequency of brain metastases was examined regarding age, sex, histological type and the size of tumor, nodal status, the sequence of radiotherapy and chemotherapy application and the type of chemotherapy. **Results.** Two and 3-year incidence rates of BM were 35% and 46%, respectively. Forty-six percent of the patients recurred in the brain as their first failure in the period of three years. Histologically, the patients with nonsquamous cell lung carcinoma had significantly higher frequency of metastases in the brain compared with the

group of squamous cell lung carcinoma (46% : 30%;  $p = 0.021$ ). Examining treatment-related parameters, treatment with taxane-platinum containing regimens was associated with a lower risk of brain metastases, than platinum-etoposide chemotherapy regimens (31% : 52%;  $p = 0.011$ ). Preoperative radiotherapy, with or without postoperative treatment, showed lower rate of metastases in the brain compared with postoperative radiotherapy treatment only (33% : 48%;  $p = 0.035$ ). **Conclusion.** Brain metastases are often site of recurrence in patients with NSCLC (IIIA-N2). Autonomous risk factors for brain metastases in this group of patients are non-squamous NSCLC, N1-N2 nodal status, postoperative radiotherapy without preoperative radiotherapy.

### Key words:

carcinoma, non-small-cell lung; neoplasm metastasis; brain; antineoplastic combined chemotherapy protocols; radiotherapy; risk factors.

### Apstrakt

**Uvod/Cilj.** Karcinom pluća vodeći je uzrok mortaliteta među obolelima od malignih bolesti. Cilj ove studije bio je da se ukaže na faktore rizika od pojave metastaza u mozgu kod bolesnika sa stadijumom IIIA (N2) nemikrocelularnog karcinoma (*non-small cell lung cancer* – NSCLC) lečenih trimodalitetnom terapijom. **Metode.** Analizirani su podaci 107 bolesnika sa stadijumom IIIA (N2) NSCLC lečenih hirurški uz dodatnu neoadjuvantnu terapiju. Učestalost metastaza u mozgu ispitivana je u zavisnosti od starosti, pola, histološkog tipa i veličine tumora,

nodalnog statusa, redosleda primene zračne i hemioterapije i vrste hemioterapije. **Rezultati.** Dvogodišnja i 3-godišnja incidencija moždanih metastaza iznosila je 35% i 46%, respektivno. Četrdeset i šest procenata bolesnika imalo je metastaze u mozgu kao prvo mesto relapsa u trogodišnjem periodu. Histološki, bolesnici sa neskvamocelularnim karcinomom pluća imali su značajno veću učestalost metastaza u mozgu u odnosu na grupu skvamocelularnih karcinoma (46% : 31%;  $p = 0,021$ ). Ispitivanjem terapijskih parametara, lečenje bolesnika primenom režima koji uključuju taksane i platinu bilo je povezano sa nižim rizikom od pojave metastaza u mozgu u











