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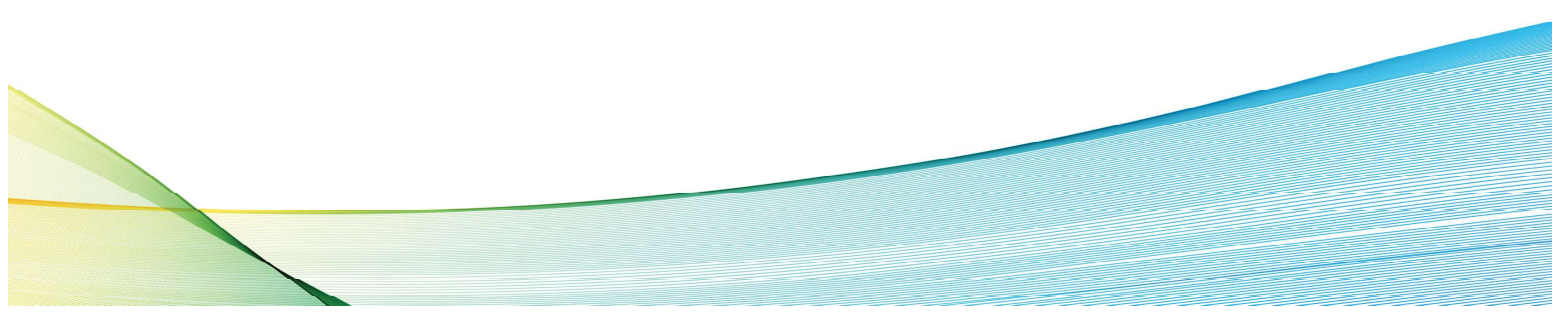
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O04

Predicting response to chemoradiotherapy in locally advanced rectal cancer using MRI-based radiomics features

Mladen Marinković[1], Suzana Stojanović-Rundić[1, 2], Aleksandra Stanojević[3], Radmila Janković[3], Jerome Zoidakis[4,5], Sergi Castellvi-Bel[6], Remond J.A. Fijneman[7], Milena Čavić[3], Marko Radulović[3]

[1]Clinic for Radiation Oncology and Diagnostics, Department of Radiation Oncology, Institute for Oncology and Radiology of Serbia, Belgrade, Serbia
[2]Faculty of Medicine, University of Belgrade, Belgrade, Serbia
[3]Department of Experimental Oncology, Institute for Oncology and Radiology of Serbia
[4]Department of Biotechnology, Biomedical Research Foundation, Academy of Athens, Athens, Greece
[5]Department of Biology, National and Kapodistrian University of Athens, Athens, Greece
[6]Gastroenterology Department, FundacióRecercaClínic Barcelona-Institutd'Investigacions Biomèdiques August Pi iSunyer, Centro de InvestigaciónBiomédicaen Red de Enfermedades Hepáticas y Digestivas, Clínic Barcelona, University of Barcelona, Barcelona, Spain
[7]Department of Pathology, The Netherlands Cancer Institute, Amsterdam, the Netherlands

Background: Locally advanced rectal carcinoma (LARC) is typically treated with neoadjuvant chemoradiotherapy (nCRT) followed by surgery. Identifying predictive biomarkers is crucial for selecting patients who will benefit most from neoadjuvant treatment. This study aimed to develop a predictive model using radiomics features extracted from MRI scans to predict the response of LARC patients to nCRT. **Materials and methods:** Between June 2020 and January 2022, we prospectively enrolled 75 LARC patients who underwent long-course nCRT. Radiation therapy was administered using volumetric modulated arc therapy-simultaneous integrated boost technique, along with concomitant chemotherapy (5FU, Leucovorin) during the first and fifth week of treatment. Treatment response (TR) was evaluated in week 8 after completing nCRT. For patients with complete clinical response (cCR) and initially distant located tumor no immediate radical surgery was suggested and they were enrolled in a strict follow-up program ("watch and wait" approach). Responders were defined as those with cCR and postoperative TRG1 and TRG2 categories, as per the Mandard classification. Non-responders were classified as TRG3-5. Initial pelvic MRI imaging was available for 71 out of 75 patients, and 3D T2-weighted (T2W) contrast sequences were utilized for tumor segmentation. **Results:** Among the patients, 46.6% were responders. Tumor morphology was assessed through the calculation of 2092 shape, first-order, and second-order radiomic features. TR was considered the outcome of interest. The least absolute shrinkage and selection operator (LASSO) technique was employed to identify the most predictive and non-redundant features associated with the outcome. Out of the 2092 radiomic features, LASSO selected eight features for the model. The final model, further selected through multivariate regression, included two features (maximum 2D diameter and complexity) with an area under the curve (AUC) of 0.76. **Conclusions:** The application of radiomics in LARC holds potential for assisting clinicians in tailoring treatment plans and making informed decisions for individual patients. Further prospective studies with larger cohorts are needed to validate these preliminary findings.
Keywords: chemoradiotherapy, response to treatment, MRI, radiomics

O05

Transcriptomic profiling of the early stage squamous cell lung cancer

Maja Šutić[1], Branko Dmitrović[2], Antonia Jakovčević[3], Fedža Džubur[4], Sven Seiwerth[3], Miroslav Samaržija[4], Marko Jakopović[4], Jelena Knežević[1],[2]

[1]Laboratory for Advanced Genomics, Division of Molecular Medicine, Ruđer Bošković Institute, Zagreb, Croatia
[2]Faculty for dental medicine and health, University of Osijek, Croatia
[3]Department of Pathology, School of Medicine, University of Zagreb, Croatia
[4]Clinical Department for Respiratory Diseases Jordanovac, University Hospital Centre Zagreb, Zagreb, Croatia

Abstract in extenso. **Background:** Lung cancer is a leading cause of death, and squamous cell lung cancer (SqCLC), a frequently diagnosed histological subtype of lung malignancy, is represented with high mortality and limited treatment options. Identification of potential targets suitable for drug development using high-throughput methods is still lacking. Therefore, the aim of this study was to analyze expression profiles of mRNA in SqCLC aiming to identify